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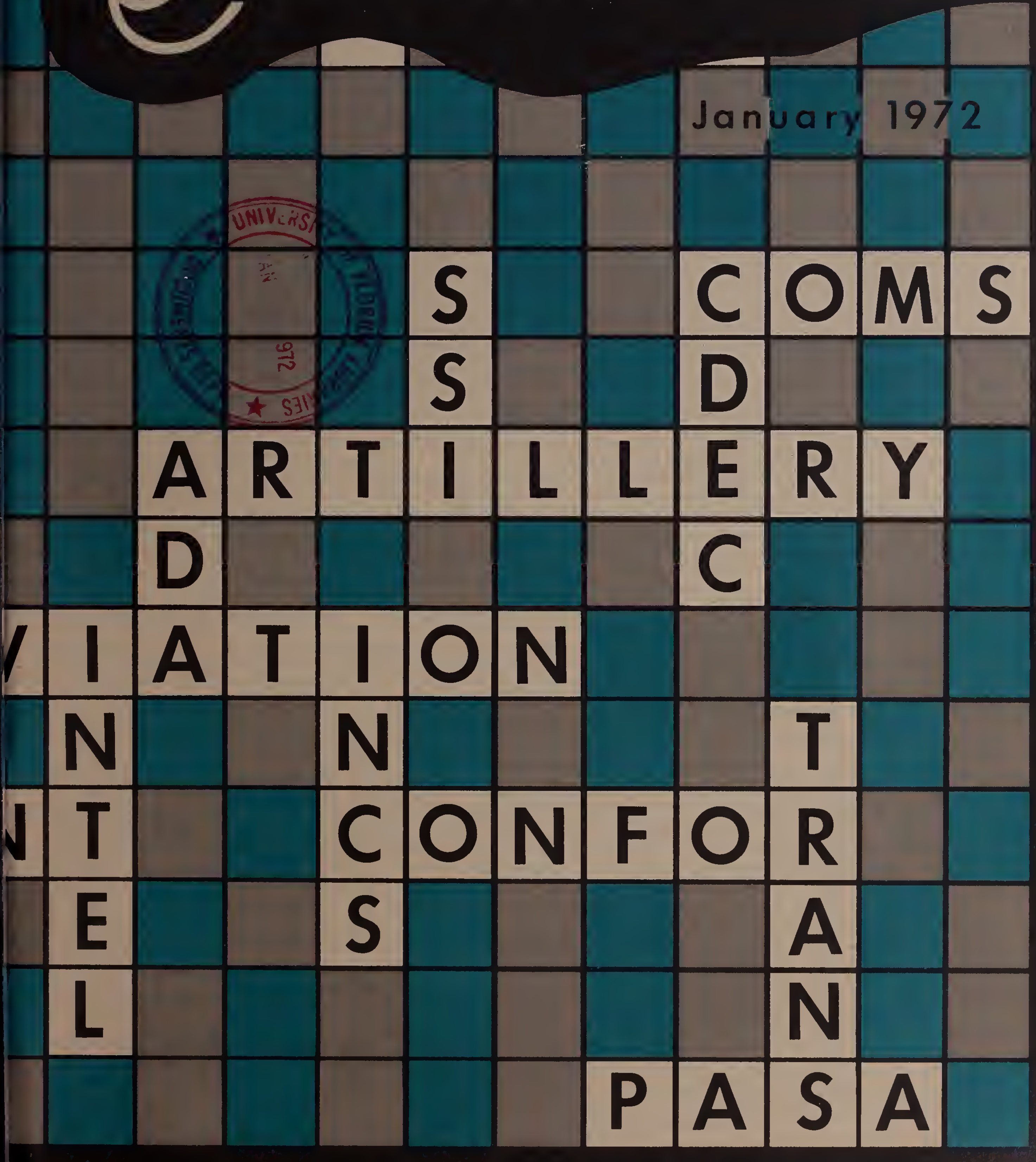
ARROWHEAD

COMBAT DEVELOPMENTS COMMAND

January 1972



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Commander's Call

January is named for Janus, the ancient Roman god with a face looking back at the past and another looking into the future. This might be a good time for us to join in the spirit of the tradition and emulate Janus.

In Combat Developments Command, a look back over the past year shows some solid indications of progress. It was a good year, especially because of these four accomplishments:

- A reevaluation of the tasks encompassed by the CDC Mission—which, in the most basic terms, is to act as the advocate of the American Soldier, assuring that he has the equipment, the organization, and *the fighting ability to win* on any battlefield of the future.
- Establishment of a list of developmental priority objectives keyed to the needs of the Soldier, coordinated with the various Army Commanders, and aligned with DA budgetary and operational priorities.
- Reorganization of the command, reallocating responsibilities and resources to meet priorities on a long and short term basis—and to provide solid, measured progress in each priority area.

- Emphasis on new management objectives, based on a series of command guidance memoranda, to provide mission-type instructions to the middle level of leadership—the Groups and CDEC.

Looking forward with the other face of Janus, we can see much left to do. Here are some areas that need our careful attention and best effort:

- The whole system of combat developments has struggled too long under overwhelming, unnecessary proliferation in almost every field associated with our combat and support units. We must move rapidly in the direction of "conliferation": careful discrimination to reduce our units to hard-core requirements for equipment, MOS's, and manpower.
- We must make better use of our operations research-systems analysis capabilities within the command. Our professional ORSA people must "home in" and "move in" on the problems of measuring effectiveness and determining optimum mixes of combat power.
- We have taken big steps forward in telling the Army Combat Developments story. Let's keep up the momentum in the coming year.

We can also draw a lesson from the mission that mythology assigned to Janus: guardian of the doorway. Combat Developments Command provides a doorway to the future Army—and, in the final analysis, CDC will be the deciding factor in determining how professional our future Army will be.

John Norton

JOHN NORTON
Lieutenant General,
U.S. Army
Commanding

D101.71: 35

FLARE

ARROWHEAD

COMBAT DEVELOPMENTS COMMAND

January 1972 No. 35

ARTICLES

2 CDC's Tactical Vehicle Review Board Puts The Squeeze on TOE
6 CDC: A Year In Retrospect
9 COMS GP
15 PALS GP
19 CONFORS GP
20 CDEC
20 INCS GP
24 USSTRICOM Exercises Joint Doctrine in Bold Shot/Brim Fire 3–71
33 Brigadier General Condit Leaves

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REGULAR FEATURES

Inside Front Cover Commander's Call
30 Point of The Arrow
31 For God and Country

PICTURE CREDITS: Pages 24–27, Page 28 (Chapparal), Page 29, Coleman; Page 28 (top) US Navy; Page 28, (center) US Air Force; all other photos, US Army photographs.

ABOUT THE COVER

Cover design by Steimer. The front and back covers designed in a crossword style depict many of the agencies and groups that make up CDC. Art work done by Mr. Stan LeBorne of the CDC Graphics Department.

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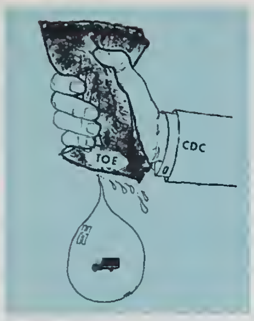

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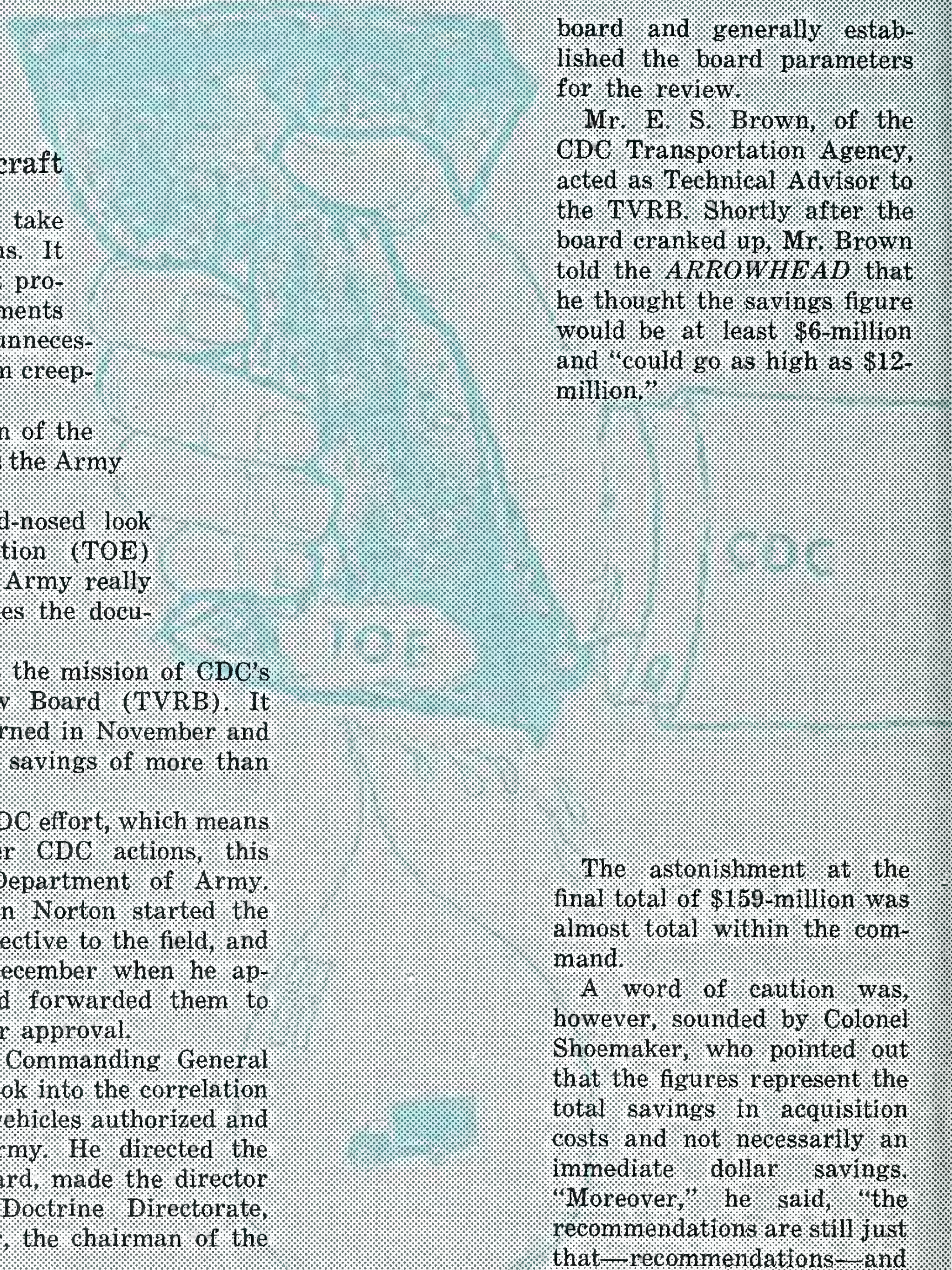
24

33

CDC'S TACTICAL VEHICLE REVIEW BOARD PUTS THE SQUEEZE ON TOE'S

Conliferation* Action Saves $159-Million

By SP5 William Witcraft



Conliferation * can take many shapes and forms. It can be a careful look at proposed materiel requirements documents to preclude unnecessary new equipment from creeping into the inventory.

It can be the reduction of the number of tactical radios the Army needs.

Or it can be a hard-nosed look at Tables of Organization (TOE) documents to see if the Army really needs the tactical vehicles the documents authorize.

This latter action was the mission of CDC's Tactical Vehicle Review Board (TVRB). It convened in June, adjourned in November and reported out a potential savings of more than $159-million.

The TVRB is a total CDC effort, which means that, unlike most other CDC actions, this was not directed by Department of Army. Lieutenant General John Norton started the work in June with a directive to the field, and concluded it in early December when he approved the findings and forwarded them to Department of Army for approval.

In his directive, the Commanding General asked the command to look into the correlation between the number of vehicles authorized and the strength of the Army. He directed the creation of a review board, made the director of the Concepts and Doctrine Directorate, Colonel John Shoemaker, the chairman of the board and generally established the board parameters for the review.

Mr. E. S. Brown, of the CDC Transportation Agency, acted as Technical Advisor to the TVRB. Shortly after the board cranked up, Mr. Brown told the *ARROWHEAD* that he thought the savings figure would be at least $6-million and "could go as high as $12-million."

The astonishment at the final total of $159-million was almost total within the command.

A word of caution was, however, sounded by Colonel Shoemaker, who pointed out that the figures represent the total savings in acquisition costs and not necessarily an immediate dollar savings. "Moreover," he said, "the recommendations are still just that—recommendations—and must be approved by Department of Army."

*** Conliferation is a CDC-coined term to denote the precise opposite of proliferation.**

The Tactical Vehicle Review Board looked at 593 TOEs to determine if some vehicles could be substituted for others. Among the recommendations often made was that the ten-ton cargo truck (above) be replaced by a five-ton (right).

Nevertheless, the result of the TVRB has been hailed by staff officers as one of the most significant actions undertaken by CDC in this or any other year. If the procurement of tactical vehicles can be cut back, the money would be available for the procurement of other items of equipment that could make substantially greater contributions to the capabilities of the Army.

The board was organized with a Chairman, Vice Chairman, Technical Advisor, Recorder, three analyst teams with two members each (one military, one civilian), Executive Board, with members from each of the command's mid-management groups, and an expertise cell from Headquarters, CDC.

The board reviewed all H-series TOE, G-series, less those for which the H-series had been developed, and T-series (less the ASTRO and Airmobile division) where no G or H series had been published. Each document was studied to determine the minimum quantities of tactical vehicles required in each TOE to adequately perform the mission of the units and activities. The analysts also determined requirements for vehicle operators and winches.

Although the reduction of trailers was not within the scope of the review board action, the loads carried by trailers whose prime mover was eliminated by board action were accommodated by transferring the load to other unit vehicles. In each case where the board recommended a reduction in a vehicle that towed a special purpose trailer, a substitute vehicle was designated as the prime mover.

The real pick and shovel work in the review was done at the agency level where each proponent of the TOE concerned was to examine closely the validity of current equipment authorization policies and criteria as well as the requirement for unit mobility.

A total of 593 TOE were examined by the 20 proponent agencies, with the distribution ranging from one each with the JAG and Chaplain Agencies, to 70 for the Field Artillery Agency.

One of four actions was recommended by the CDC proponent agencies:

Retention—The vehicle should be retained in the TOE in its present configuration and authorized quantities.

Elimination—The vehicle should be deleted from the authorized equipment listing in the TOE.

Reduction—Authorized vehicle types can be reduced in quantities from TOE authorizations, such as, four ½-ton trucks now assigned to perform administrative functions can be reduced to three without affecting mission performance requirements.

Substitutions—This action could be recommended if the TOE proponent element believed that a substitution of a lesser quantity of vehicles with more capability for a larger quantity of vehicles with lesser capability would satisfy unit requirements.

The re-validated TOE documents then were forwarded to the analyst teams for review. The teams reviewed the proponent recommendations on an exception basis. If a team took exception to an agency's recommendation, attempts were made to negotiate a mutually satisfactory resolution at agency or group level. If the exception could not be resolved, it constituted a "divergency" which then had to be adjudicated by the TVRB in executive session.

Of the 593 TOE, recommendations on 128 were concurred on outright by the analyst teams and 465 recommendations received non-concurrences. Negotiations between the analyst teams and TOE proponents resolved exceptions on 415 of these non-concurrences and the remaining 50 TOE were adjudicated before two executive sessions of the board.

Examples of the types of vehicles which the board believed could be reduced included:

Combat Arms—reduction of administrative staff vehicles and consolidation of tasks; substitution of small prime movers for trailers.

Combat Support—elimination of excess supply vehicles and substitution of smaller vehicles.

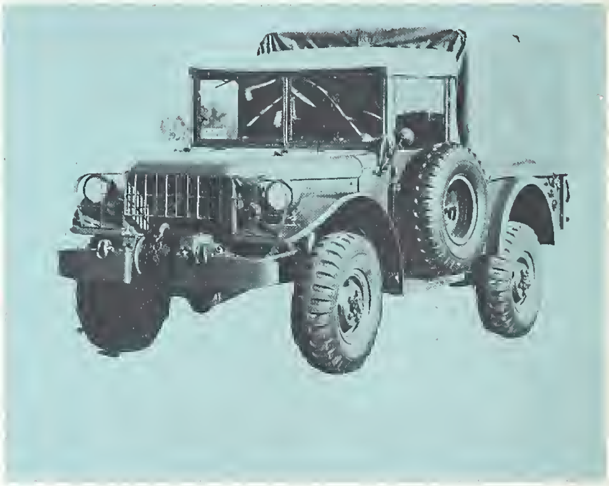
Combat Service Support—elimination of excess special purpose vehicles; elimination of prime movers when infrequent displacement of trailers made shuttle movement possible.

Colonel Shoemaker said that although each TOE was considered separately, the board, in making recommendations, considered the availability of general purpose transportation. The tactical environment in which each unit would operate also was visualized by the board in its deliberations.

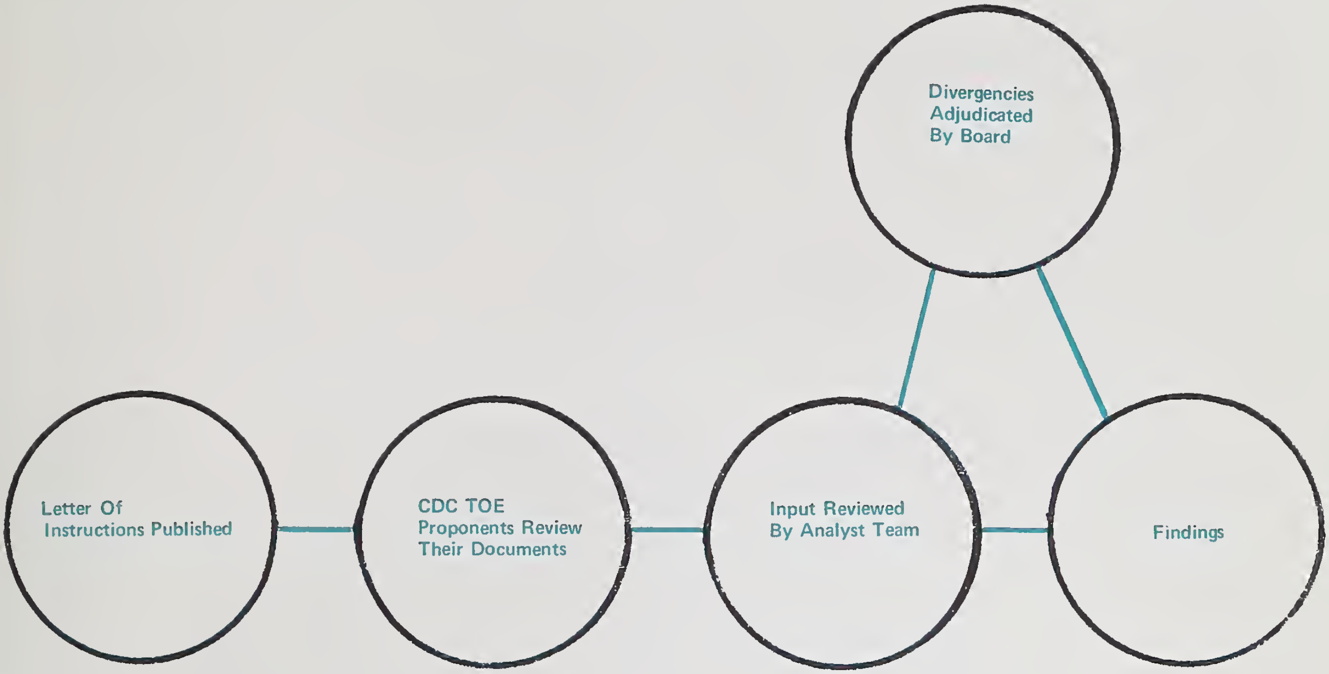
In addition to its major finding—that of the dollar savings through elimination of vehicles—the board made other ancillary findings.

The board found that authorization criteria established in AR 310–34, although expressed in general terms, provided adequate guidance in TOE preparation. But, according to Col. Shoemaker, proponent agencies interpreted the guidance provided by the AR most liberally, and, in many cases, used the extreme allowance permitted rather than the more conservative standards prescribing the function use of transportation.

The requirement for 100 per cent mobility, as expressed in a TOE, was interpreted by some proponents to mean that all personnel, materiel, impedimenta, and accompanying supply were to be mobile at all time in organic transporta-



Another popular trade-off made by the analyst teams was to use the ubiquitous quarter-ton (top) to substitute for the ¾-ton truck. Also eliminated through actions of the TVRB were 17,059 winches, such as pictured at bottom.


Divergencies Adjudicated By Board
Letter Of Instructions Published
CDC TOE Proponents Review Their Documents
Input Reviewed By Analyst Team
Findings

tion. The board found this in some cases to be unrealistic and completely unnecessary in many others.

The board's recommendation to Department of Army, in addition to the savings in acquisition costs, also calls for elimination of the requirement for 789 full-time drivers and 17,059 winches.

The board's findings, if approved, would result in reduction of the tactical vehicle/manpower ratio of the Army in the field from 1:6.1 to 1:7.0.

Colonel Shoemaker said that in addition to the primary impact of the board's findings, there are many ancillary implications. Because of the reduction in vehicle numbers, a related reduction could take place in the following:

- Maintenance Personnel
- Repair parts
- Maintenance float stocks
- Maintenance units and equipment
- POL requirements
- Trailers
- School quotas for operator, maintenance and supply personnel.

In addition, there will be an accompanying reduction in strategic transportation requirements for unit deployment within the Continental United States and to overseas areas.

The Tactical Vehicle Review Board was given a verbal pat on the back by General Norton when he was briefed on the Board's findings and recommendations. He called the action one of the most significant ever achieved by a CDC organization.

If anyone in CDC ever had any doubts, they can erase them now.

Conliferation is alive and well.

One vehicle that the board found very difficult to eliminate or even substitute for was the M274A1 Utility Platform, also known as the "Mule".

CDC: A YEAR IN RETROSPECT

ARROWHEAD presents in this issue a series of brief reports from the many and varied organizational units that compose the Combat Developments Command. The presentation, meant to be both historical and informative, shows the variety of accomplishments and new developments wrought during the year, 1971.

CONCEPTS & DOCTRINE

The Doctrine and Concepts and Plans Directorates were combined and retitled Concepts and Doctrine. Colonel Louis Gelling, who retired in July, turned the Directorate over to Colonel John O. Shoemaker. Colonel Nels A. Parson, Jr. became the Assistant Director and Colonel Robert E. Hammerquist was designated the Deputy.

Many high impact CDC programs and projects were coordinated for the Command Group by this Directorate.

In the area of airmobility, the "Least Cost Phase-In" study was completed as a follow on to the Family of Army Aircraft Systems Study (FAAS–85). The principal objective of the LCP study was the development of a computer model that would assist DA planners in determining when to phase out existing equipment systems and when to phase in new systems over time, with considerations for monetary and manpower constraints.

During 1971, many actions relative to the maneuver battalions were begun, completed, or approved by the Combat Operations Division. ATMIX (Anti-tank Weapons Systems Requirements) evaluated the need for a mid-range anti-tank system. It substantiated the medium anti-tank weapon requirement and its results have been used for many key anti-tank decisions.

The Integrated Battlefield Control System (IBCS) was developed by the Control and Support Division and approved by DA in April, 1970. Further refinement of the concept was formulated in the Phase I effort which was forwarded to DA in April, 1971. The Division assisted DA ACSFOR in preparing the Army Tactical Command and Control Master Plan (ATACCOMAP) which establishes a program for the development of automated command and control systems.

In the area of communications and electronic warfare several studies were completed. Among these were the Electronics Warfare 1975 (EW–75) study which was designed to provide an improved capability to the US Field Army Commander in conducting operations in a hostile EW environment, the Integrated Tactical Communications Systems Study (INTACS) which will assist in developing future communications requirements and the Phase II Family of Scatterable Mines Study (FASCAM) which defines the use of scatterable mines on the modern batlefield.

In the Force Design Division the Conceptual Design for the Army in the Field study (CONAF) and the Concept for a Family of Army Divisions (CONFAD) study were of high priority. The former deals with the development and application of a methodology to analyze and determine a preferred force design for the 1976–82 period with optimum combat effectiveness within projected levels of available resources. CONFAD is developing innovative structuring concepts for the organization of light, heavy, and experimental divisions.

The Intelligence and Threat Division continued work in the area of attack helicopters in an anti-tank role. The Division also published a weekly "Black Book" which contained information on the world situation and changes in science and technology. This book assisted the Command Group and developmental directors in keeping abreast of current intelligence information.

The Personnel and Logistics Division completed a number of studies during calendar year 1972. Among the important ones are: The Field Materiels Handling Equipment (MHE) Family Study, Family of Army Vehicles (FAVS) Study, and Integration of Direct Support Aviation Maintenance Systems (IDSM) Study.

The Field Materiels Handling Equipment Family Study was completed and approved by HQ CDC during October, 1971. This study addressed the entire spectrum of materials handling concepts to include developments in unitization and containerization. The recommended family of materials handling equipment will provide the Army in the Field with the capability to handle containerized cargo at all echelons.

The Programs and Management

Division completed 32 field manuals and forwarded them for publication. Among these were FM 31–82 (Test) Base Development, which prescribes Army doctrine to assist commanders and staff officers in developing a base or bases in a theater of operations and FM 57–35, Airmobile Operations, which incorporates the latest combat-proven doctrine on airmobile operations.

Concepts and Doctrine Directorate looks forward to another year of successful coordination of CDC programs and projects.

DATA PROCESSING

The Directorate of Automatic Data Processing and Management Information Systems (ADP/MIS) continued during the year to provide CDC with imaginative leadership in the application of modern computer-management technology, both to the Army in the Field problems and problems associated with improving CDC's ability to react to the developmental requirements of a modern Army.

The Combat Systems Division (CSD) was identified as the CDC staff proponent for TOS, TACFIRE, AN/TSQ-73, TACSINC, and ATMS. Acceptance by ECOM of the Training Support System for TACFIRE was accomplished and Litton Industries began training test personnel. The request for proposal for the TOS System Engineering Study was sent out and Litton submitted their proposal in March. Development continued on schedule in other areas until April. In April, the CSD was transferred to INCS and ADP/MIS became DMIS with the sole mission of exploiting computer-management for CDC.

The Management Information Systems Division (MISD) continued with success to reduce the time required to obtain retrievals from the MIS even as the workload increased to 142 retrievals a month. In addition, it designed new report formats in order to reduce the report writing time of action officers. The processing time for TOE's was reduced from 500 days to 350 days.

Progress was made by the Plans and Control Division in obtaining a large scale computer to be based at Ft. Leavenworth, Kan., with terminals to other parts of the command. The scientific capability of this machine will eliminate the necessity of command elements purchasing time on machines outside CDC.

In the development of new systems our Systems Development Division made major progress in development of the Technical Data Base System. This is a joint effort of in-house and contractor personnel to create a centralized source of technical information that will be responsive to CDC, DA and other Commands, providing both discrete data of a technical nature on field or developmental systems and the necessary tools to correlate this data with doctrinal and organizational implications. The study of user requirements was completed and a Macro-design arrived at. Work now continues on the detailed design which will be programmed in-house for use on the computer.

MATERIEL SYSTEMS

Under the leadership of Colonel Joe B. Lamb, the Directorate of Materiel Systems improved management practices and achieved significant accomplishments in the developmental cycles of combat materiel.

This introduction of a new management system and the Materiel Need Concept has streamlined methods of putting materiel objectives and requirements into the combat development system. A coordinated effort of CDC and AMC, this concept, one document as compared to several under the old system, established a need for new or improved items for the Army and provided life cycle guidance to materiel developers. In conjunction with this "consideration" was begun, aligning materiel needs by priority, eliminating those showing a low return on investment, and reducing requirements by combining them where possible. The conliferation goal is to stay within budget limitations; yet select for development the essential items required to meet future threats.

The Materiel Need (Engineering Development) document for the Utility Tactical Transport Aircraft System (UTTAS) was developed jointly with AMC. This project, underway since 1965, is presently on milestone schedule.

Also last year, great strides were made toward optimizing the Army Tactical Multi-channel Communications System (ATMC), formerly known as the Army Area Communications System (AACOMS). Revisions reflect the technology of the 1970's, and will provide the Army with a family of automatic and semi-automatic tactical switchboards to replace present manual switchboards. Actions are also underway to automate the Air Traffic Management System (ATMS).

Recently, CDC completed the Army's first independent user evaluation of the M60A2 tank, which was subjected to extensive engineering and service testing by TECOM. Results of the In-Process Review assisted in the DOD production decision made in October.

LANCE, the US Army's future missile system designed to provide general artillery fire support to the Corps and Divisions, progressed through the contractor demonstration phase of research and development to the engineering and service tests phase.

CDC and the other Army commands reviewed the qualifications of various candidate weapons to replace basic REDEYE as the Army's manportable air defense missile system. The review concluded that a second generation system, known as REDEYE II, would best suit the Army's needs. REDEYE II will resemble the basic weapon, but will use a new seeker to permit engagement of incoming aircraft and a new rocket motor to permit intercepts of higher speed targets.

Throughout 1971, the Improved Hawk System, which will eventually replace the basic Hawk as the Army's low to medium altitude air defense weapon, was subjected to vigorous tests designed to prove that it will meet user needs in the field.

SAM-D, the Army's highest priority surface-to-air missile system development, was again under extensive review. As a result, AMC and CDC developed a new Materiel Need document and a System Development Plan in-process review was completed in November.

In addition to the normal hardware developments of combat materiel, CDC responsibilities have expanded to include civil disturbance and civil emergency operations equipment. Worldwide coordination on a requirements document for a Protective Face Shield, to be affixed to the M1 Steel Helmet to protect troops from hurled or wielded materials and corrosive toxic liquids from rioters, was recently completed.

These accomplishments are only a sampling of the actions which took place during 1971. Currently there are over 400 DA approved documents in the Combat Development Objectives Guide (CDOG) and an additional 270 materiel actions being developed or processed. With the adaptation of the Materiel Need Concept, the future should show promise of improved quality and timely development of validated materiel needs.

TEST & EVALUATION

The Combat Developments Command's "old" Evaluation Directorate has undergone many changes to include its "new" title of Test and Evaluation Directorate.

The organization has changed to accomplish future and ongoing missions. Its present organization is as follows: Field Operations Division, Plans, Program, Methodology and Evaluation Division, Field Experimentation Division, and MASSTER Coordination Division. Colonel Vincent J. McManus is the Director with Colonel John M. Shultz as Deputy.

In response to the Deputy Secretary of Defense's desires to have each service organize an Operational Test and Evaluation (OTE) Agency, CDC was designated as the Army Command responsible for OTE. The Plan/Programs, Methodology and Evaluation Division, under the direction of Colonel James R. Wilson, designed an organization to accomplish the new mission by expanding the Test and Evaluation Directorate. Major functions of the expanded organization included the planning, programming and budgeting for OTE and the provision of assistance in the form of teams of experienced personnel to test directors for the detailed planning, conducting, and reporting of tests.

Six evaluations were completed under the guidance of Field Operations Division since the last issue of year-end roundup for the *"ARROWHEAD"*: Field Evaluation, Army Strategic Tactical Reorganization Objective (ASTRO) Mechanized Division; Field Evaluation, Combat Support Hospital: Field Evaluation, Mission Effectiveness in a Toxic Environment (METOXE) I (Maintenance); Field Evaluation, Explosive Ordnance Disposal (EOD) in the Field Army; Troop Test, Add-on Stabilization System, M60-A1 Tank; and Field Evaluation, Division Data Center. Increased emphasis on the planning and preparation was conducted for the following evaluations: Field Evaluation, Tactical Automatic Switching System (TASS), Troop Test, Division Air Defense, Field Survey, Mission Effectiveness Without Anti-icing and Deicing Equipment, European Helicopter Operations, and Combat Hunter (formerly Maverick). Field Operations Division continued in its primary role of exercising staff supervision over the mission performance of CDC's Experimentation Command located at Ft. Ord, Calif.

Test planning activities for TRICAP/ACCB continued at a high level during 1971, and execution of Phase I of the ACCB test was completed by MASSTER. This test report was expected at year-end.

Colonel Davis was named chief of the MASSTER Coordination Division on 9 August 1971, replacing Colonel C. L. Spettel who moved to Field Operations Division as Division Chief.

ORGANIZATION

The Directorate of Organization, under the leadership of Colonel James L. Riffe, has had many key personnel changes during CY 71. Among the key management changes was the assignment of Colonel Robert P. Story as Deputy Director; the assignment of Colonel Robert L. Harper to Chief, Requirements Division; and the assignment of Colonel Raymond D. Barrett to Chief, Organization and Equipment Division.

Among the several priority projects in TOE development during the year, foremost was the continuing development of H-series TOE. Much of CDC's TOE development effort went to converting the Airmobile Division tentative TOE to the H-series. The H-series Airmobile Division TOE, like the Armored, Infantry and Infantry Mechanized (AIM) Division TOE developed in 1970, features the latest equipment and personnel requirements, such doctrinal concepts as the Division Logistics System (DLOGS) and the Improved Medical Support to the Combat Division, and an added organic air defense capability.

In early 1971, the directorate was tasked with the development of TOE for a new experimental division to be known as TRICAP. This division is currently being tested at Ft. Hood, Tex., under Project MASSTER.

Development of the Air Cavalry Combat Brigade (ACCB) (Separate) TOE were initiated during 1971.

Continued emphasis was made to improve the quality and usefulness of organization products. The formal review of TOE and BOIP by TOE and BOIP review boards during the staffing of these documents within HQ USACDC has contributed immensely to the quality of these products. The directorate also established a study group to examine all aspects of TOE development and recommend methods or procedural changes to the current system in order to expedite the development and improve the quality of TOE. In June, the group completed phase I of the study and recommended the adoption of a single change system in place of the TOE consolidated and separate change systems. The single change system will require making MOS, equipment or concept changes to the TOE data bank on a continuing basis and publishing cumulative changes semiannually. DA approved the study recommendation and operation of the system is scheduled to begin on 1 July 1972. The Phase II objective to increase the application of ADP methods to TOE development is also one of the objectives of a contract study which the Computer Science Corporation is conducting for USACDC. The directorate is closely coordinating the study to improve TOE quality with the TOE portion of the contract study.

During 1971, this directorate published CDC Pamphlet 310-4, Reference Digest of TOE. This digest, formerly published by ACSFOR, was expanded to include BOIP developmental information. The document has become a valuable reference book for TOE and BOIP developers and has resulted in the reduction of research effort, while at the same time improving the quality of BOIP.

Topping off this productive year was the Organization Symposium. The symposium, held in December, brought together the CDC organization development family to review the results of our past efforts and to determine how we can do our job better in the future.

COMS GP

GROUP HQ

CDC's Combat Arms Group (CAG) experienced significant personnel and organizational changes in 1971. In February, Brigadier General Albert G. Hume returned from assignment as Deputy Chief of Staff for Plans and Operations, US Army Vietnam, to become Commanding General of the Combat Arms Group. Two months later, CAG completed the final phases of a major reorganization and was redesignated the Combat Systems (COMS) Group.

Among more noteworthy aspects of the reorganization was COMS Group's assumption of numerous functions formerly performed by the deactivated Institute of Combined Arms and Support (ICAS). Additionally, four agencies—Air Defense, Chemical-Biological-Radiological, Engineer, and Military Police—joined Armor, Aviation, Field Artillery, and Infantry as subordinate elements of COMS Group.

The basic mission of COMS Group remains the same—to provide for the best in materiel, doctrine, organization, and training for tomorrow's Army, with heavy emphasis on the needs of the individual combat Soldier.

COMS Group accomplishes its mission by intensive in-house efforts and through the teamwork of its eight subordinate agencies.

ENGINEER

The Engineer Agency continued and completed major actions in 1971 to support the Command's motto: "Vision to Victory."

The Agency changed commanders during the year. Colonel R. J. Lamp assumed command in the early fall, replacing Colonel J. G. Becker, who was assigned to CDC Headquarters

to head up the Resources Management Division in the Office of the Deputy Chief of Staff/Operations.

GIANT-85 was completed. This study which outlines a geographic intelligence and topographic support system for the Army in the field addressed new organizations and equipment with cost effectiveness techniques.

The new organizational and operational concepts for the Engineer Construction Battalion were completed. Tentative TOE's and training texts were written to test the concepts developed.

Development of engineer organizations and doctrinal literature for the TRICAP/ACCB was a major effort.

In coordination with CDC Headquarters, a test was conducted to consolidate TOE changes by rapid response making maximum use of ADP.

Performance characteristics for the 25-ton hydraulic crane, a 1500 gallon asphalt distributor, and a 20-ton dump truck are either approved or being staffed at DA to implement the Commercial Construction Equipment (CCE) Program. Early procurement of pilot items to support the CCE tests is anticipated.

The major current action is the study of a Family of Scatterable Mines (FASCAM). The purpose of the FASCAM Study is to identify and evaluate a family of scatterable mines to support tactical and strategic operations against enemy ground forces in the 1976-1982 time period and to recommend types of mines with their specific characteristics which should be developed.

Two studies are underway to improve the tactical and non-tactical military bridging in the future. The latest technological advances to improve our bridging capability while reducing costs will be explored.

TOE's for the new Ribbon Float Bridge will be completed early next year. This bridge will eventually replace the old pontoon M4T6 bridge which has been used since the Korean War.

The Pre-Engineered Logistic and Administrative Structure Study (PLAST) will recommend sizes and characteristics for prefab structures which can be rapidly assembled for use by a rapidly deployed force anywhere in the world.

The Agency assisted Headquarters, USACDC in the conduct of a test to automate BOI procedures.

To keep up with the rapid changes in doctrine and materiel, FM 20-32, Mine Warfare, is being revised and will include information on countermine techniques.

MILITARY POLICE

During 1971, the Military Police Agency of the US Army Combat Developments Command's Combat Systems Group continued and expanded its concern and interest in the fields of doctrine, materiel, and organization for use by both the Military Police Corps and the Army in the field.

Significant organization and personnel changes included the arrival of a new Commanding Officer, Colonel Frank L. Griffin, and a Deputy Commander, Colonel John T. Alexander.

With no glamorous new item of equipment to study, test, and evaluate, the Doctrine Division of the Agency responded to doctrinal actions supporting the Army in the field. The study of the use of military dogs in support of military police operations is noteworthy. Additionally, a draft manual on a joint-services interior intrusion detection system was prepared. Physical security—the protection of sensitive installations—is always significant, and has required a special study to update current policy, as well as propose changes.

The Materiel Division has been concerned with many items of equipment to be used by military police in a routine day-to-day operation, as well as in combat. Some of the items being studied are currently in the Army inventory but most are in the developmental process. One prominent area of study has been in civil disturbance control equipment.

Evaluated have been items ranging from "smoke rope," a pyrotechnic cord which burns at an almost explosive rate and sets up a huge, persistent cloud of riot control smoke along a continuous line of employment, to caseless smoke grenades, to individual marking and incapacitating pistols. Ideas such as weapons which fire rubber balls or electric wires have been presented. Each item is evaluated by the MPA in terms of its utility, applicability, and opportunity for effective, yet physically safe, application. We seek only to TAP them, not ZAP them! Shock batons, weapons detection devices, restraining devices, and so on, are being considered for military use.

The theory of minimum essential equipment and personnel required for mission accomplishment was ever present in the Organizational/Evaluation Division. This division has attempted to live with one of the Army's most pervasive questions today: how to maintain a combat ready force that is properly staffed and equipped in the face of continually diminishing resources?

Thus the MPA is involved with a myriad of projects. Add to this the debriefing of some Vietnam returnees, briefings of classes and visiting dignitaries, and it is plainly seen that the Military Police Agency had a busy, fruitful year.

CBR

During the past year, the mission of the Chemical-Biological-Radiological Agency at Ft. McClellan, Ala., was expanded when the Agency was assigned the important responsibility of monitoring technological advances in the energy beam (laser) field.

To ascertain the state-of-the art in laser technology, liaison has been established with USAMC laboratories and other sources of technical information. The Agency has maintained liaison with CDC agencies having proponency for Materiel Needs (MN) pertaining to laser applications, suggested new operational applications for lasers, and provided CDC expertise and points of view at in-process reviews (IPRs).

Agency personnel, assisted by Maintenance Agency personnel, participated in a field evaluation of the maintenance portion of Mission Effectiveness in a Toxic Environment (METOXE I), which was conducted at Ft. Riley, Kan., in May 1971.

The Agency has made significant contributions to international activities by developing Army doctrinal, materiel, and organizational positions for CBR aspects and by participating in the Quadripartite Working Group for Nuclear Defense Equipment, the Quadripartite Working Group for Chemical-Biological Equipment, and in two NATO groups: the NATO NBC Operational Procedures Interservice Working Party, and the NATO Army

Armament Group, NBC Defense Panel VII. The Agency also furnished the Permanent Standing Chairman for the Quadripartite Working Group for Chemical-Biological Equipment.

Of special significance to the Agency last year was a change of command when Colonel Robert L. Andreoli left for the Advanced Research Projects Agency in Vietnam in June, 1971, and was replaced by Colonel Kenneth L. Stahl. Colonel Stahl came to the Agency from the Industrial College of the Armed Forces, where he was a student.

A highlight of the year was a DA-sponsored symposium on the CW/BD program, which was held at Ft. McClellan in October, 1971.

During the year a new field manual, FM 3–3, was completed. This manual provides doctrine on the employment of herbicides in military operations. Also completed and distributed was a revision of FM 21–40, the basic Army manual on CBR defense.

Two studies that were completed and distributed last year were: "Objectives and Systems for Decontamination in the Field" and "Army Air-Delivered Flame Munitions." The decontamination study took a realistic look at problems of CBR decontamination and the capabilities of the Army to cope with these problems. The flame study discussed the capability of Army air-delivered flame/incendiary munitions to defeat various categories of tactical targets.

The Agency worked on a number of important materiel requirements actions concerning the development of binary chemical munitions to eliminate all safety hazards connected with lethal chemicals, the development of incapacitating chemical agent/munitions systems, and the development of equipment for CBR detection and warning.

AIR DEFENSE

The year 1971 for the Air Defense Agency has been a period of high intensity effort.

For the first time, AD materiel development was accorded priorities encompassing an entire program from now until 1985. This program is documented in the Air Defense Artillery Materiel Development Plan (ADAMDEP). The Agency chaired the advisory group and directed the development of the plan, as well as providing the major contribution in its formulation.

In the SAM-D (Surface-to-Air Missile Development) area, a system to replace the Nike Hercules and Hawk systems, ADA continued efforts to establish a Materiel Need document for SAM-D while preparing and publishing a communication requirement to provide detailed guidance not included in the QMR for SAM-D.

The ADA intensified its effort in the improved Hawk area. During the first quarter of 1971, the ADA conducted an extensive review of the Army requirements for the Improved Self Propelled Hawk (ISPH). Simultaneously, ADA conducted a thorough review of the Improved Hawk for USAREUR with the purpose of preparing a recommended position resulting from the reduced force level.

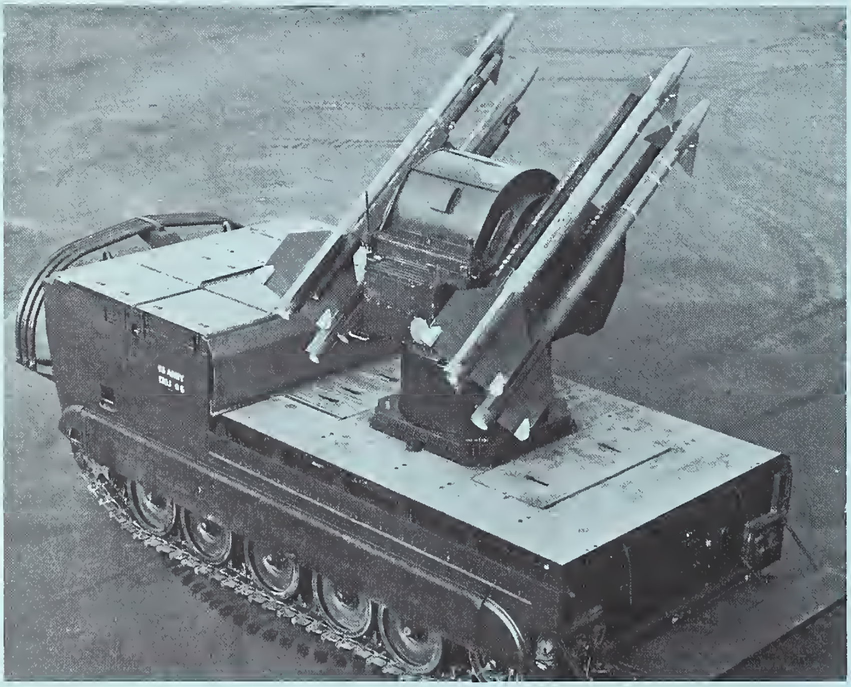
During 1971, developmental work was continued on the Forward Area Alerting Radar (FAAR) system. The service test was completed in September 1971, with the engineering test phase still active.

The Agency conducted a field survey of Chaparral/Vulcan battalions in CONUS and in Europe. The survey highlighted areas which require Center Team action.

In the MANPADS area (Advanced Man Portable Air Defense System), the ADA participated in a joint effort with the US Marine Corps toward the recommendation to initiate Priority 1 engineering development of the weapon system.

During the first quarter of 1971, the ADA produced a final draft manuscript pertaining to FM 44-96 (AD Artillery Employment, Hawk). This FM, which was forwarded to TAG for printing, was the first CDC manual submitted under the Field Manual Improvement Program to incorporate innovations designed to increase the value of the field manual to the user.

Of particular significance in the DA directed study program was the wrap-up or completion of the Air Defense Evaluation Board Study. The Field Army Air Defense Systems (FAADS) as directed by DA was implemented by HQ CDC during the period of April through June 1971, and the completion of the draft study plan was accomplished during the same time frame.



During 1971, the Agency intensified its efforts in the recognized airspace coordination problem. The purpose of the primary effort was to develop a set of detailed rules and procedures for airspace coordination within the field army. A separate package of detailed procedures for airspace coordination is provided for each user of the airspace from the maneuver battalion to the field army level. These procedural techniques have been designated as a Combat Developments Command Training Text 44-10-1, "Army Airspace Coordination Techniques," and will be published and distributed in December, 1971.

AVIATION

The Aviation Agency has the mission of augmenting the capabilities of the Army's role of providing immediate and sustained combat on land through the application of aviation and aviation techniques.

Concept formulation for the Agency's newest proposed aircraft system, the Utility Tactical Transport Aircraft System (UTTAS), received approval from DA this past year. Requests for contract bids for the engine system were issued in July and will be issued shortly for the airframe. This system will replace the current UH-1 family of aircraft.

A draft proposed Materiel Need for a heavy lift helicopter (HLH), capable of lifting up to 30 tons, was distributed for world wide review in July. Work is continuing on the development of the mission performance envelopes and the various subsystems required in concept formulation.

During the past year the Agency assisted MAAG-Iran in reorganizing Iranian Army Aviation. A representative from the Agency was sent to Iran for the purpose of establishing more modern aviation doctrine concepts and organization.

Prior to 1 December 1970, the Aviation Agency had proponency for all aircraft armament systems. The transfer of proponency for the majority of aviation units to other agencies resulted in the loss of eleven of these systems. However, the Agency is still actively engaged in providing major input on the systems to the proponent agencies. In addition, the Agency still has proponency for two of the major armament and aircraft systems, the AAFSS and AH-1G.

In consonance with the increased emphasis on electronic warfare and the transfer of proponency for aircraft electronic warfare self-protection and radar warning systems to the Aviation Agency, an Electronic Warfare Project Office has been formed. This office will be engaged in converting existing QMR's to Materiel Needs as well as the development of a Materiel Need for an Aircraft Electronic Warfare Self-Protection System.

ARTILLERY

In pursuit of maintaining the reputation as the best artillery in the world, the field artillery agency pushed forward with the research and development of materiel items to fulfill this requirement.

The World War II vintage 155mm towed howitzer (M114A1) will be replaced by the new XM198, 155mm towed howitzer.

A significant breakthrough in the field of cannon artillery was reported in response to a materiel objective. The XM204 presents a new concept in weapon development. The XM204 is a test model of the soft recoil concept in a 105mm configuration.

Another item of equipment which has moved along in the development cycle is the LANCE missile. During 1971 the LANCE system began its ET/ST cycle. Based upon the new AR 70-10 the field artillery agency has become more deeply involved in the listing of an item of equipment than at any previous time in CDC's history.

Effective 1 July 1971, the Aerial Field Artillery branch was formally recognized as a part of the agency with the responsibility to monitor research and development of aircraft, aerial weapons systems, and associated munitions having AFA application.

In survey, the effort has continued toward field devices and systems which will free the field artillery from time-consuming conventional surveying techniques. Development proceeded on a Long Range Position Determining System which will permit the transfer of survey control from a known point by means of a ground tracking station, an airborne station, and ground trans-

ponders at the points to be surveyed.

The most significant development in the field of optical and associated devices involved the writing of a Materiel Need for a family of laser designator/rangefinders.

Materiel Need for an Airborne Target Locations System (ATLS) describes a system which will locate targets a considerable distance beyond the FEBA from a single sighting with sufficient accuracy to deliver surprise fire.

After several years of unspectacular but productive exploratory, advanced, and engineering development, 1971 saw dramatic and visible progress in the radar field. ENSURE models of the AN/TPS-58 (RATAC) were deployed to RVN in July and August. Programs to field counter-battery and counter-mortar radars were expedited with a goal of reducing the time required for research, development, test, evaluation, and initial production by 3-5 years in both cases.

Activity in the Communications and Electronics field was directed toward assisting and monitoring the development of the Tactical Fire Direction System (TACFIRE), initiating the development of a Miniaturized Battery Computer (MINIBAC) and a Hand-Held Remote Data Entry and Read-Out Device (DEROD), and providing guidance to insure interoperability between NATO countries.

The TACFIRE Table Data Base which the Agency has been developing in conjunction with the Oklahoma University Research Institute (OURI) since 1967, was transferred to the Computer Systems Command in July.

The Miniaturized Battery Computer (MINIBAC) Materiel Need, now in initial draft proposed form, is directed toward extending automation and interoperability from TACFIRE into the areas of target acquisition, meteorology, survey, cannon batteries, missile and rocket battalions, and aerial field artillery battalions to achieve a fully integrated field artillery system.

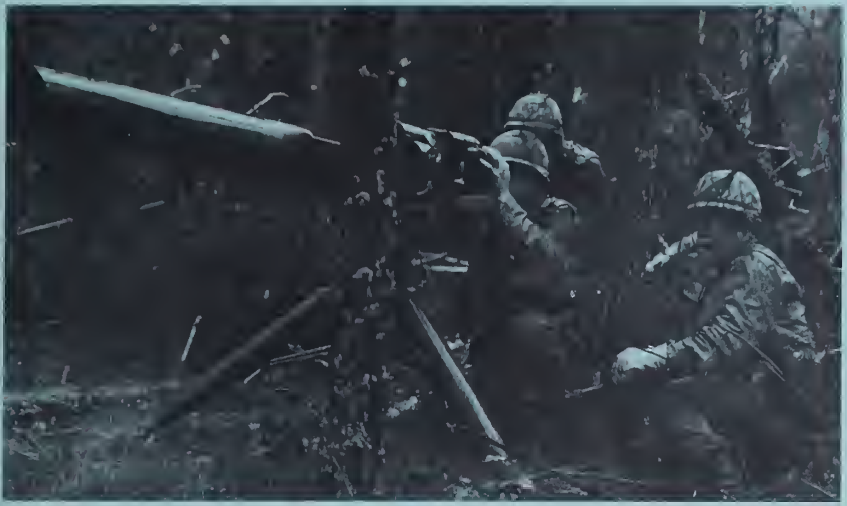
MINIBAC is also a replacement for the Field Artillery Digital Automatic Computer (FADAC) in the functional areas where FADAC is not replaced by TACFIRE.

INFANTRY

The Infantry Agency continued during the year under the command and leadership of Colonel Robert H. Siegrist. The composite divisions of the Agency, however, had changes in chiefs. When Colonel Joy A. McDonald went to MACV, Colonel William C. Carper, III replaced him as Deputy Commanding Officer, leaving the Combat Materiel Division to newcomer, Colonel John L. Daniels, a graduate of the Army War College.

Lieutenant Colonel Albert W. Malone directed the Doctrine and Organization Division through the early months until Colonel John E. McCleary took over the Studies Division from retiring Colonel Marcus W. Coyle; and Colonel Clarence E. Jordan, Jr., joined the Infantry Agency as a Special Projects Officer. The percentage of personnel turnovers for the whole workforce was approximately 33%.

The Dynamic Infantry Study, started during 1970, was expanded during 1971 with the organization of a study team to conduct Phase



Two (DYN–IN II). The purpose of the Dynamic Infantry Study was to examine Infantry organizations and doctrine against future roles and missions in light of new weapons and equipment which would become available during the period 1972–1982.

During 1971, the Infantry Agency's Doctrine and Organization Division (D&O) continued revising and writing new publications for use of Infantry units in the field. FM 57–35 on Airmobile Operations was distributed to the field in March, 1971, and FM 31–25 on Desert Operations is now at the printers for publication and distribution.

Materiel developments, which received continued attention, were focused on the reality of a depopulated battlefield.

In this light, the Infantry Agency took advantage of the rapid technological advancements being made in unattended ground sensors by concentrating efforts on the rapid development of the Platoon Early Warning Device (PEWD). This device will provide a lightweight, small system of sensors which can be radio or wire linked to a compact, pocket sized enunciator.

During 1971, the Infantry Agency provided input to and helped prepare the Materiel Need (MN) for an Army Common Positioning and Navigation System (PANS). In

A number of Agency activities during the year were targeted toward improving the infantry's lot in its anti-armor role. Follow-on efforts to the ATMIX Study were completed in early March and largely reflected in the ACSFOR Basis of Issue decisions for the TOW system announced shortly thereafter. A significant anti-armor-related action during July and August was the field evaluation test of the light observation helicopter in an anti-armor role (LOHAR) at Ft. Bragg, N.C.

Much work was done in 1971 on the indirect firepower requirements for the infantry. Current efforts are directed towards a lighter weight mortar with lightweight ammunition of greater lethality to increase firepower and mobility of infantry units.

During 1971, the Infantry Agency has followed very closely the exploratory development of the lightweight squad automatic weapon (SAW), a need recognized by the Infantry Rifle Unit Study (IRUS).

The Infantry Agency, during 1971, has continued to look into various ground mobility concepts that might show promise of providing increased capabilities to infantry units. As a result, two concepts being analyzed are the Fast Infantry Support Transport (FIST) and the XR–311, both in the high mobility, all-terrain vehicle class of ground vehicles.

Through the eyes of the Infantry Agency, the momentum generated in infantry developments during the past year will be the impetus to insure that this combat arm will truly find 1972 a "leap year" in progress toward its goals.

ARMOR

DID NOT SUBMIT A REPORT

PALS GP

GROUP HQ

The year 1971 was a busy and profitable one for the Combat Developments Command Personnel and Logistics Systems Group Headquarters.

The Directorate of Materiel Systems has provided staff supervision and direction of some 127 objectives/requirements/needs documents for which the Group had proponency. Notable achievements during the year include work in the Test, Measurement, and Diagnostic Equipment (TMDE) efforts in support of the Explosive Ordnance Disposal (EOD) Program and Development of Materiel Need (MN) Documentation for Ammunition Tool Sets.

The development of tactical vehicles has been brought under close staff surveillance. Other mobility efforts were carried out in the marine-craft field.

In support of the Group's Reliability, Maintainability and Availability (RMA) mission, 587 non-proponent on-going actions were monitored during the year.

The directorate also acted to prevent fielding of a number of systems that were non-supportable or marginally supportable by the logistics system of the Army in the Field.

The Directorate of Concepts and Force Design (formerly Directorate of Doctrine) has been working for the past year on two major studies that will have a significant impact on the Army's Combat Service Support Systems. The Conceptual Design for the Army in the Field (CONAF) study has progressed through various stages to a detailed development of force structures required to keep the combat forces in fighting trim throughout a wide range of geographic areas and conceptual approaches to combat.

The Rapid Integrated Logistic

System (RILS) study will for the first time produce a comprehensive listing of logistical requirements, problems and their solutions that occur during the initial planning and operational stages of opening a new theater of operations.

The Directorate of Organization, Literature and Evaluation, which is responsible for the development of personnel and logistic organizations, the doctrine by which they operate and the evaluation of new organizations and concepts, completed 25 separate TOE actions and 13 Manpower Authorization Standards and Criteria studies.

A serious lack of procedural guidance available to the field has been identified as the "Field Manual Gap." To reduce this "gap" eight new manuals were completed and sent to the Army Publication Agency for printing and distribution; 37 more are being processed with 40 scheduled for completion next year. In addition, seven training texts in support of the TRICAP Division are scheduled for completion and distribution in February 1972. These texts will provide guidance for the operation and evaluation of the TRICAP DISCOM.

PASA

The USACDC Personnel and Administrative Services Agency at Ft. Benjamin Harrison, Ind., commanded by Colonel Gerald L. Overstreet, was the scene for change of command ceremonies on 6 August 1971, when the present commander, Colonel Lester J. Evans, then the Deputy CO/Chief, Doctrine Division, took over the reins and Colonel Overstreet departed for his new assignment with the Physical Evaluation Board, Fitzsimmons General Hospital.

The main thrust of the agency effort during the first three quarters of CY 1971, was directed towards completion of Phase I of the Personnel Offensive. The group of six project officers devoted exclusively to this task was supplemented by many other agency members on many occasions. In spite of this concerted effort to a major project, the agency proceeded to write meaningful field manuals for review and ultimate publication. Thus far, one has been published (FM 12–2, Personnel and Administrative Support in Theaters of Operation) but five others have been to the field for review, coordination, and final preparation. The total schedule includes twelve current time frame field manuals.

Force design action has resulted in the completion of two tables of organization and equipment with three others in process. An interim MACRIT for finance for JUMPS is complete.

Preparation for four major studies to be undertaken were made during the calendar year. Draft study directives and draft study plans were prepared and submitted for Military Personnel Management, Finance Service/Support, Postal Operation, and Special Services. In addition to the above, the agency was proponent for the division data center evaluation (on-going). Further, we took part in CS3, IBCS, Tactical Vehicle Review, CONAF, and TRICAP.

In relation to the latter, we have provided input to TT 54–2–2, DISCOM (TRICAP) and prepared initial drafts of TT 12–4–2, Adjutant General Company, TRICAP Division, and TT 14–4–2, Finance Company, TRICAP Division.

SUPPLY

Responsibilities assigned to the USACDC Supply Agency were increased in the petroleum and shelter areas during 1971.

The Agency has served for a number of years as the Command's focal point for coordinating data and actions on all aspects of the petroleum supply system. Early in 1971, this responsibility was expanded to encompass petroleum storage and distribution equipment, less construction items.

In August, 1971, the Supply Agency also was designated the Command control review point for TOE shelter requirements.

During the year, the Agency Commander participated as the USACDC member on the DA Subsistence Operations Review Board (SORB). In this capacity, he made field trips to Southeast Asia and to CONUS food service facilities and assisted in the preparation of the SORB report.

In the study area, two significant actions were accomplished. The Phase I final draft of the Field Materiels Equipment Family study was completed. This phase of the study examines the entire spectrum of mechanical devices for handling supplies through and from terminals, warehouses, and storage areas to using units.

The initial coordination draft of the study, Aircraft Rearming and Refueling in Forward Areas, was published and distributed to the field for review and comment. The study identifies and evaluates current doctrine, organization, and equipment utilized in rearming and refueling Army helicopters in forward areas.

The total package of DPTOE for the support battalion of the Air Cavalry Combat Brigade (Separate) was assembled by the Supply Agency with input from the Engineer, Communications-Electronics, Maintenance, and Transportation Agencies.

Substantial progress was made during CY 71 in both improvement and extension of the Division Logistics System (DLOGS). The class IX supply system was completely redesigned by the Supply Agency and, after testing, was installed Army-wide (less Vietnam and Ft. Hood, Tex.) by US Army Computer Systems Command (CSC) with CDC participation.

In furtherance of a previous commitment to Congress to field a standard Army logistics system by 30 June 1972, DA organized the Standard Army Intermediate Level System (SAILS) Functional Guidance Group in June, 1971, with headquarters in Northern Virginia and a branch office at the Presidio of San Francisco. Since the supply (and related financial accounting) elements of the standard logistics system had been accorded first priority, the entire CDC membership quota of six was filled by Supply Agency personnel. Late in 1970, the group completed an exhaustive review and a critical evaluation of 730 logistical baseline requisites established under DA Project, Turn-the-Corner.

TRANSPORTATION

Highlighting the past year in the USACDC Transportation Agency were the efforts expended on two major proponent studies and a myriad of projects involving input efforts to other Department of the Army elements.

The Family of Army Vehicles Study (FAVS) was completed and forwarded for approval. The recommended family of Army vehicles identified in the study is a major "conliferation" of the vehicle inventory in the 1970-75 time frame.

Phase II of the Trans-Hydro Craft Study examined candidate craft, the environment they will operate in, what supplies they will carry, the configuration of the loads, and the type of inter-theater shipping fleet the candidate craft will interface with operationally.

In addition to the above major studies headed by the Transportation Agency, numerous other projects have been participated in and/or accomplished by agency personnel.

The Tactical Vehicle Review Board was convened at Ft. Eustis to examine mobility in current tables of organization and equipment to determine minimum essential mobility required to maintain unit mission capabilities.

The transportation annex to the study on Rapid Integrated Logistics Systems (RILS) was completed and submitted to the proponent element for incorporation into the main report.

Transportation concepts and doctrine for the Army in the Field Container System Study (AFCSS) has been submitted to the proponent element. Containerization is of major interest to the Transportation Agency and is being addressed in several studies.

The Transportation Agency is working on requirements for improvement of the MILVAN chassis. The candidate will be a multipurpose trailer that will be able to transport the MILVAN and bulk cargo.

As the proponent for all of the tactical transport vehicles in the Army inventory, the Transportation Agency has been tasked with the requirement of preparing a Materiel Need document for a 1¼-ton limited mobility vehicle which is to be completed by December 1971.

1971 was a busy year for the heavy equipment transporter (HET-70). Transportation Agency personnel attended three meetings on the HET-70 resulting in a change to the qualitative materiel requirement, preparation and acceptance of a check test plan, and a product improvement package.

The Transportation Agency has revalidated the Proposed Qualitative Materiel Development Objective for Trans-Hydro Craft Beaching and Shore Crossing Lighterage and converted it to materiel need (MN) format.

JUDGE ADVOCATE

The increased activity of CDC in the human factors area of combat development has caused a significant increase both in the number and complexity of actions which impact on the Judge Advocate Agency.

Although the Agency still is concerned with many of the problems of JAG organization and equipment, the Modern Volunteer Army concept, in general, and the Personnel Offensive, in particular, have generated several studies designed to re-examine the Army's approach toward the administration of criminal justice in the Army.

One such study—Justice in the Modern Army—has undertaken to examine the requirements of an effective system of military justice in a combat and noncombat environment and then to determine what a military code *should* do to insure an expeditious and judicious result to both the accused and to the Government. The study will include an evaluation of Military Justice Codes of other countries and their impact on disciplinary problems. The final product will be a proposed Code of Military Justice which would incorporate the best features of all approaches toward fielding a well disciplined and motivated military force.

Another study—JA Personnel Requirements in Type TOE Units—approached the subject from the viewpoint of the military lawyer. An effort has been made to provide the Army with an organizational structure that achieves several objectives: (1) Quality legal services to the commander as quickly as possible; (2) Retention of Army lawyers of highest professional standing; (3) Office management techniques and equipment usage to insure the most efficient use of professional training; and (4) Expeditious processing of military justice matters.

MAINTENANCE

Movement at CDC Maintenance Agency (MA) at Aberdeen Proving Grounds, Md., remained in high gear with their participation in several projects during the past year.

One area the MA concentrated upon was the Reliability, Maintainability and Availability (RMA) aspects of Army materiel. Inadequate levels of RMA in Army systems have been immediate factors for the excessive maintenance and support burden the Army is experiencing (as much as one-third of Army equipment inventory is deadlined for maintenance at all times). The solution to this intriguing problem concerns establishing, rationalizing, and enforcing proper levels of RMA for Army systems. Therefore, the MA launched a concentrated effort in the form of a briefing team with a message designed to implant a basic understanding of the essential aspects of RMA.

In 1971, the Missile and Munitions Division of the Maintenance Agency, located at Redstone Arsenal, Ala., was assigned the task of developing and implementing the evaluation of the Lance system. This evaluation will encompass, but not be limited to on-site evaluation of the system, data analysis and final report of findings to be accomplished by use of newly developed check lists and revised data collecting techniques.

During the past year, the MA has just about completed its "accelerated" field manual program. A number of agency produced FMs were completed and forwarded to the Adjutant General for printing—with the remainder of the manuals to be completed and forwarded during FY 72. All of these FMs contain more "how-to-do-it" information than previously provided in FMs.

Another major accomplishment in the doctrinal area was the MA field evaluation of Explosive Ordnance Disposal in the Field Army (EOD). This evaluation (conducted in USAREUR during March and April) placed special emphasis on the incident reporting system, control-unit operations, responsiveness of communications and technical intelligence operations.

One other development that warrants mentioning is the newly formed Systems Development Office that began preparation of the general functional system requirement document for the Standard Army Maintenance Reporting and Management (SAMRM) Subsystem.

MEDICAL SERVICE

In consonance with the Medical Service Agency's mission of improving field medical support to the individual Soldier, considerable amount of time and effort has been spent to develop those things which protect and aid his physical faculties.

FAASTO, which stands for Fatigue, Asynchronosis and Acclimatization in Sustained Tactical Operations, is the Agency's contribution to the world of acronyms, but more importantly its effort to better determine existing "state-of-the-art" for improvement of man's capabilities in areas of fatigue and anti-fatigue, acclimatization, disturbed wake-sleep circadian rhythm and asynchronotic conditions.

Conclusions drawn from a review and analysis of available literature will provide a basis upon which to establish the relationship between human capabilities and limitations for sustained and continuous military operations under rapidly changing environmental conditions.

The study will propose methods for optimizing human capibilities to engage in such operations and the identification of shortfall areas as related to conceptual employment of man's capabilities.

The "eyes" may have it, but the Medical Service Agency feels that ear protection is just as vital and important. September of this year opened with a conference sponsored by the Agency on acoustic protection. The participants, both military and civilian, met at San Antonio to discuss such topics as the medical aspects of acoustic damage, the methods of measuring noise levels and the attenuation characteristics of protective devices, the noise levels of military materiel and the present state-of-the-art in acoustic protection. Comments delivered from the floor during the meeting by several attendees indicated that this conference was undoubtedly the most profitable of its kind held in several years.

Specialization certainly has its place, but MSA is also concerned with giving today's and tomorrow's Soldier whole body protection. This is evidenced in two particular Agency developments. One, FM 8–22, "The Combat Medic," is a new contemporary manual for today's medic/aidman in the field—written in a style that allows quick understanding and easy retention. The other, and most important, was the development of TOE 8–123H, The Combat Support Hospital, and its subsequent field testing at Ft. Sam Houston (Phase I) and Ft. Bliss (Phase II), Tex. during June 1971.

CHAPLAINS

One of the smallest CDC agencies is a member of the Personnel and Logistics Systems Group located at Ft. Lee, Va. Operating for some years with a staff of three officers and one civilian secretary, the Chaplain Agency has had only two chaplains assigned most of this year.

Irrespective of the smallness of the agency, it is still charged with accomplishing all of the functions of the larger agency. A difference is that the larger agencies may put a number of officers on a given project. In the Chaplain Agency each chaplain handles a number of different projects at one time.

One of the more time consuming aspects of the work of this agency is to provide input and to monitor the revisions of TOE and field manuals. Each TOE that has chaplain spaces, and there are 170 of them, must be checked with each change or revision to assure that all chaplain spaces have been filled and that all required equipment is so designated for chaplain use. Some agency other than the Chaplain Agency is the proponent for all but one of these TOE. While this agency is proponent for only one Field Manual, it is necessary to review drafts of others and provide input as required.

A program placing 23 cassette tape recorders with the Air Defense Command chaplains for field testing was completed. The type of recorder tested has been selected as the best available and a recommendation has been made for placing it in the Army supply system, then making it available for use by chaplains for field services. The cost of the recorder is less than one-fifth that of the electric field organ which had been used for field services.

In an effort to make the chaplain altar kit more practical, as well as more substantial, some modifications have been made. These include a stronger and heavier cloth, a webbing carrying strap, a short carrying handle, and waterproofing of the top of the cloth case. These changes along with the cost saving changes provide a more serviceable kit for the chaplain in the field.

CONFORS GP

GROUP HQ

The earlier planned merger of the Institute of Land Combat with the Institute of Advanced Studies at Carlisle Barracks, Pa. was only partially executed when it was superseded by a broader reorganization of the entire Combat Developments Command.

The driving event of the year 1971 was the impact of the CDC reorganization on Concepts and Force Design Group's organization and activities. This impact had two aspects: (1) CONFOR Group's timeframe responsibility became greatly enlarged. Whereas ILC's timeframe was restricted almost entirely to the long range period, the CONFOR Group timeframe included the short and mid, as well as long range timeframes. (2) ILC's mission responsibilities were centered almost exclusively on preparation of the Land Combat System Study. By contrast, CONFOR Group, while continuing its responsibility for the Land Combat System Study, has received many additional functional responsibilities. The expanded CONFOR GP continues the former concept design responsibilities, and also adds new doctrine, force design, materiel needs and proponency for doctrine above division level.

To carry out this broader mission, the Commanding General, CONFOR GP, Brigadier General R. J. Fairfield, Jr., was assigned command of the Nuclear Agency at Ft. Bliss and the Special Operations Agency at Ft. Bragg. Concurrently, the residual elements of ICAS associated with the new CONFOR mission at Ft. Leavenworth were designated CONFOR GP WEST (PROVISIONAL) to provide for a systematic transfer of functions.

Typical of the new functional responsibilities assumed by CONFOR Group were the following: technical nuclear considerations, stability and special operations, airspace management, amphibious and riverine operations, tactical air support, joint air defense, and naval gunfire support.

New directorates are: Environments; Concepts, Doctrine and Force Design; Evaluation; Materiel Systems; Literature; and Support and Administration.

The Environments Directorate, while continuing support to the Land Combat Systems Study, developed budgetary, manpower and operational restraints for the long-range period, prepared country and regional studies in support of the Army's Role in Security Assistance Programs in the 1970's, and prepared the Threat Portion of the Headquarters, CDC publication "Combat Developments Guide."

The Concepts, Doctrine and Force Design Directorate (CODAF), while defining the Army's interest in air space management, prepared to assume proponency for Conceptual Design for the Army in the Field (CONAF) 1976–1982. CODAF also assisted the American, British, Canadian and Australian Standardization effort in writing the High Intensity War and Factors Shaping the Decade sections of the 1981–90 Concept. Concurrently, it provided the force designs for the mid and long-range timeframes to all CDC elements conducting studies on the Integrated Battlefield Control Systems (IBCS).

The Evaluation Directorate developed a capability to conduct war games, simulations, and other forms of analyses related to force design studies while completing the remaining analyses and evaluation relevant to the Land Combat System-I Study.

The Materiel Systems Directorate developed input into the combat developments Guide by the Technological Opportunities Program which is a "user" oriented synthesis of technical and scientific information keyed to its application in the combat developments process.

The Literature Directorate was organized to implement the Group's mission of follow-on doctrine for the Army in the Field above division level. The Directorate of Support and Administration developed the requirements, data basis, and orderly transfer of functions and expertise necessary for CONFOR Group to execute its dynamic and comprehensive role in the future.

Thus, 1971 was a monumental year, seeing the phasing of the Institute of Land Combat into the Concepts and Force Design Group, the continuation of previous missions, and the refinement of the Center Team Concept to develop the best Army in the Field for the future.

NUCLEAR

DID NOT SUBMIT A REPORT

SPECIAL OPERATIONS

In early August, the Institute of Strategic and Stability Operations, commanded by Colonel James Barker, was renamed the Special Operations Agency, and now has the mission of developing operational concepts, organizations, and materiel systems for stability operations, unconventional warfare, psychological operations, civil affairs, civil-military operations, and all intensities of conflict.

Two former tasks of the old institute were assigned elsewhere in the CDC community. The US Army C5 evaluation group, located at Charleston AFB, was assigned to HQ. CDC; and the air movement functions and its related responsibilities were assigned to the Concepts and Force

Design Group. Also during this recent reorganization within CDC, the Civil Affairs personnel were relocated from Ft. Gordon, Ga. to Ft. Bragg, N.C.

During the past year, two studies have been completed and coordination drafts submitted for field review and comment. The captured/detained U.S. military personnel study (USPOW) is a development of Army doctrine for U.S. PW's in three specific stages: during training and prior to internment, during internment, and post internment.

The mix of Civil Affairs Active and Reserve Study (CAMIX) addresses criteria for determining the best mix of civil affairs active and reserve units.

Two other studies are also underway. The Army Advisory Assistance and Stability Operations study (ADVASO) will develop Army doctrine and broad guidance for US Army Advisors whose duties include providing stability operations advice and assistance to host country forces. The civil-military operations study (CIMO) will develop doctrine, organization, and materiel requirements for civil-military operations during all intensities of conflict.

Development of the Stability Operations System (SOS) progressed rapidly. The insurgent sub-model was completed, and work continued on the host country team sub-model.

During the period 14 April–9 June, a research visit was made by the Special Operations Agency's Scientific Advisor, Mr. William Hartness, to Korea and Guatemala to observe and obtain data concerning US Army roles and missions in developing countries. This data will assist in obtaining more accurate insight into how CDC should address U.S. advisory assistance in stability operations.

CDEC

The Experimentation Command dropped a "C" this year but continued to perform its mission of ensuring the orderly and timely development of the Army's combat developments programs for the Army in the field.

Formerly known as Combat Developments Command Experimentation Command (CDCEC), the organization is now known as Combat Developments Experimentation Command (CDEC).

Presently commanded by Brigadier General Ray Ochs, the command recently celebrated its fifteenth anniversary of producing valid results and answers through simulated warfare at its field testing laboratory on Hunter Liggett Military Reservation (HLMR).

BG Ochs assumed command of CDEC in March, 1971, after the departure in February, 1971, of Brigadier General Thomas W. Brown for Vietnam. BG Brown had been the Commanding General of CDEC since December, 1969.

Beginning in January, 1971, and continuing throughout the year, numerous important experiments, both large and small-scale, and many testing and evaluation missions were accomplished at HLMR. This was true despite the departure of Litton Scientific Support Laboratories (LSSL) and the arrival of the new CDEC scientific support contractor, Braddock, Dunn and McDonald from El Paso, Tex., in mid-year.

During the months of March thru May, 1971, an experiment was conducted to test a new methodology used to identify which of several individual firers caused the hit on a particular target when using small arms currently in the Army inventory. Experimentation proved that correct firer-target assignments could be made in over 90% of the trials. These results have greatly increased CDEC's ability to assess the value and effect of the individual Soldier's contribution to the overall fire effectiveness of his unit.

Another experiment used experience gained from Long-Range Reconnaissance Patrols (LRRPs) in the Republic of Vietnam. This Small Independent Action Force experiment, nicknamed SIAF, evaluated the ability of small units to infiltrate simulated hostile territory and gather information on hostile enemy forces. Various means of observation, target location and verification were employed and evaluated.

The series of Direct Fire Simulator (DFS) evaluation and acceptance tests successfully resolved the problem of determining immediate hit or miss information among Soldiers participating in a non-live-fire tactical exercise. The system uses a harmless laser beam adapted to a wide range of weapons and photo-electric receptors mounted to individual players, vehicles and aircraft. When the diffused "burst" of light is discharged by a weapon firer and strikes one of the detectors on the target, a coded pulse is transmitted by the Range Measuring System (RMS) Transmitter (portable or vehicular-mounted) to a central computer system. Firer-target results are instantaneously determined by the computer which indicates that the target was hit via an audible or visual signature (a light or a buzz) which is relayed back to the target.

A recently implemented experiment which will continue into calendar year 1972, is the XM19 Serial Flechette Rifle evaluation. This evaluation experiment will compare the fire effectiveness of the XM19 rifle to that of the M16 rifle.

More than 650 guests and distinguished visitors got a firsthand look at CDEC and HLMR during the year. Among these were military and civilian representatives from Italy, Germany, Netherlands, Thailand, Japan, Vietnam, Australia and the United Kingdom.

Although CDEC looks to the future in its experiments and instrumented technology, the command also takes note of the many personal achievements and contributions made by its Soldier and Civilian members.

INCS GP
GROUP HQ

The United States Army Combat Developments Command Intelligence and Control Systems Group came to life when USACDC completely reorganized and made its Groups functional organizations. As a result of this reorganization, Control Systems Group (CSG) was redesignated the

USACDC Intelligence and Control Systems Group (INCS) on 15 April 1971, under the command of Brigadier General Edward F. Gudgel, Jr.

In the reorganization, INCS transferred four of the six agencies previously a part of CSG to the Combat Systems Group (COMS) at Ft. Leavenworth, Kan. The remaining two agencies, the Communications-Electronics Agency and the Intelligence Agency, stayed with INCS Group. The headquarters also reorganized. The Intel/STANO Systems Directorate from the Institute of Special Studies (ISS), the IBCS and TOS elements of the Institute of Combat Arms Studies (ICAS) and the Combat Systems Division of the CDC directorate of ADP/MIS were added to INCS Group. These additions, plus the old CSG headquarters, formed the new INCS Group Headquarters.

The mission of the Group was greatly expanded. It now has the mission of producing developmental products related to concepts, doctrine, materiel and organization for intelligence, communications-electronics, command and control, STANO, IBCS, ARTADS and satellite systems for the Army in the Field. It also assumed the responsibility of insuring the integration of signal security, signal intelligence and electronic warfare combat developments of the Army Security Agency into the combat developments actions of CDC, while continuing to command its two agencies, CEA and INTA.

This was the new CDC group known as INCS. Two agencies and a Group headquarters took the lead in intelligence, communications and tactical data systems for the Army in the Field. Producing concepts, doctrine, materiel needs, literature and organizations, military and civilian alike formed a new team—a team born in 1971 to develop the world's best intelligence and control systems for the future US Army.

COMM-ELEC

The Communications-Electronics Agency (CEA), at Ft. Monmouth, N.J., under the leadership of Colonel James P. Mattern, also reorganized while accomplishing its mission of developing Communications-Electronics concepts, doctrine, organizations and materiel requirements for support of the Army in the field. Its physical facilities were also streamlined and improved—by a good deal of this refurbishing being on a self-help basis with Agency personnel wielding paint brushes and making minor repairs.

The mission of the agency was effectively accomplished through the efforts of the six divisions. Colonel Claude R. Harris, the Deputy Commander, and Mr. William Mannel, the new Scientific Advisor, provided exceptional advice and assistance to the Commander and the six agency elements. These elements were the Command element, the Operations office, the Communications System Division, the Organization Doctrine Division, the Materiel Evaluation Division and the Administrative Services Division.

The Agency tasks throughout 1971 were numerous and significant. The beginning of the year marked the concluding phase of two priority Department of the Army projects. The TACSATCOM Cost Effectiveness Analysis, the highest priority task, showed the high potential of the use of communications satellite relays for tactical operations.

A major effort was also put forth on the field evaluation of the Tactical Automatic Switching Systems (TASS) in USAREUR. From August until December, the agency had a representative on TDY with Seventh Army where he monitored the Military Potential Test for the equipment (AN/TCC–25), made the field evaluation, and effected the necessary coordination between the Agency and Seventh Army.

Another major task of CEA was drafting of Materiel Needs (MN) documents on important CE items.

Also of importance was the Integrated Tactical Communications System (INTACS) project which was undertaken during the fall of 1971. It is designed to provide a detailed and comprehensive communications plan for the Army in the Field for the near, mid, and long range time frames.

INTELLIGENCE

The Intelligence Agency (INTA) also had a significant year in terms of accomplishments and activities. The Agency, headed by Colonel George W. Peterson, moved during the month of June from Ft. Holabird, Md., to Ft. Huachuca, Az. The 35 military and civilian personnel who made the move to Arizona formed a solid nucleus of expertise on which to build at their new location.

The Agency continued to be involved with a number of important projects. It had been deeply involved in the Remotely Monitored Battlefield Surveillance System (REMBASS). The purpose of this system was to provide a tactical sensor system capable of filling gaps not covered in other intelligence collection methods. The Agency also studied the Tactical Imagery Interpretation Facility with the view of including modular construction as well as a real-time viewing data terminal system. In addition, work had been started on the OV–ID Mohawk and the Unmanned Aerial Vehicle System.

INTA had also been busy in 1971 with Conceptual Design for the Army in the Field (CONAF). Members of the agency have been working with MASSTER at Ft. Hood concerning the intelligence organization for the TRICAP Division and the Air Cavalry Combat Brigade. In adding to these studies, the Commander's Surveillance and Target Acquisition Information Needs (CSTAIN) was being refined and updated. And the Agency was studying the application of probabilities in the intelligence estimate to express the uncertainty of the battlefield with less vagueness and ambiguity.

An in-depth review of the TARS–75 study was also accomplished by INTA in 1971. The purpose of this project was to review and prepare for implementation those portions of the TARS–75 study that are valid at this time.

SSI

The Strategic Studies Institute is charged with production of studies "on the nature and use of the US Army during peace and war to assist in achieving U.S. national objectives."

Under the direction of Commanding General, Major General Franklin M. Davis and Deputy Commander, Colonel Jack A. Boulger, the SSI responds primarily to the study needs and concerns of Department of the Army staff agencies. Studies deal with several areas at the broad strategic or departmental level. The following briefly presents the five major efforts undertaken by the Strategic Studies Institute in this past year.

ALTSTRAT, an acronym for "Alternative Strategies for Variant US Military Resource Postures", provides DA planners with a thorough analysis of ten alternative strategies during the period 1976-1982. The analysis included a visualization of force deployments with associated risks, opportunities, concepts, objectives, and missions.

A study, Alternatives for Improved Army Forces Capabilities, is being considered by SSI to determine what significant improvements in Reserve Component organizational concepts, missions, and readiness might be achieved and what the costs and implications of these improvements are likely to be. A methodology to be used in future analyses of Reserve Components and total force deployability is also being developed.

ARSAP-70 enunciates timely conclusions on the types of security assistance needed in the 70's and identifies changes in the world that will affect US security assistance policies and implementations. The study recommends means by which the US Army can best implement military assistance.

The Tactical Nuclear Operations Concepts (NOC) study was a DA ODCSOPS-sponsored attempt to develop concepts for the tactical use of nuclear weapons in theater conflict. SSI developed the study as a logical follow-on to the TACTO study which analyzed the tactical nuclear option from a National Command Authorities' level of perspective and had concluded that a range of options for a theater was necessary to support a national strategy of collective security, deterrence, and flexible response.

The study published in October, 1971, provides a cohesive strategy for the conduct of tactical nuclear operations, thereby becoming the basis for further contingency planning and requirements computing. The study provides a catalogue of concepts for the employment of theater nuclear forces.

SAG

Dynamic progress best characterizes the operations of the Systems Analysis Group during 1971.

Consolidation of the command's operations research/systems analysis assets was completed and field offices were established at Ft. Lee and Ft. Leavenworth. As did most of the other organizations of CDC, we got a new name; and along with it, some new incentives. For the first time, SA Group was brought up to strength in officer personnel. By August, it had a real capability to discharge the mission assigned to Systems Analysis Group: "To provide operation research, systems analysis, and related scientific support for USACDC."

In a continuous effort to improve the quality of the SA Group products, several actions have been initiated. A Project Review Board has been established internally to provide constructive criticism from key members of the organization prior to release of study work to a customer.

In July-August the SA Group sponsored the presentation of a short, intensive course in military operations research presented by Dr. Bonder of the University of Michigan. This was a two-week course and was attended full time by about 50 people from the SA Group.

Another, longer-term improvement effort is the establishment of an intern program under which young college graduates undergo a period of both formal and on-the-job training.

SA Group already has a good start in improving the analytical tools available to the command. The Systems Assessment Model (SAM), initially developed under contract, was brought in-house by SA Group and within one year has been debugged, exercised and documented, and is now providing useful output for analysis.

The Phase I SAM was designed to simulate a brigade or smaller STANO system in a low-intensity conflict. The model permits the establishment and evaluation of numerous effectiveness criteria for individual STANO sensors and subsystems.

The model has the capability of producing information permitting scientifically supportable evaluations and judgments of interface requirements and trade-off options of STANO subsystems. It can be used for parametric analysis, trade-off analysis, and system performance sensitivity tests. It should be emphasized that SA Group is no longer dependent on the contractor to make use of this model; this is a giant step forward for the Army and for CDC.

Currently, a large-scale computer model of infantry combat is being developed in-house as part of the ASARS Study. Highlight of this effort was the initiation and development of the first in-house stochastic computerized model attempted within the SA Group.

The installation of a data transmission terminal in SA Group Headquarters with direct access to the computer at Department of Health, Education and Welfare and use of computers within the GSA Automatic Data Processing sharing exchange, while only a small step, should result in greatly improved computer availability and turnaround time.

With the understanding and cooperation of the rest of the CDC family, SA Group looks forward to making even greater strides in the future.

STRIKE CHANGES NAME; GAME STAYS THE SAME

General John L. Throckmorton

United States Readiness Command (USREDCOM) began operations on 1 January as one of the United States' eight unified and specified commands. It replaced the United States Strike Command (USSTRICOM) about which the following article was written.

USREDCOM, commanded by Army General John L. Throckmorton, has as its major missions the task of controlling U.S. based combat ready forces and providing a general reserve of these forces for the purpose of reinforcing other overseas unified commands. These missions involve the joint training of assigned forces and the development of joint doctrine. These are missions and responsibilities that were carried over and were principal missions and responsibilities of USSTRICOM.

The major operational change from USSTRICOM to USREDCOM was the transfer of the geographic area of responsibility of USSTRICOM—Middle East, Africa south of the Sahara, and Southern Asia (MEAFSA)—to other unified commands and to an agency of the Joint Chiefs of Staff in Washington.

USREDCOM consists of more than 1,100 personnel from the Army, Air Force, Navy and Marine Corps. Its headquarters at MacDill Air Force Base, Fla., is broken down into two major groups—the headquarters proper, and an air mobile communications support element.

USSTRICOM was organized in 1961 by direction of President John F. Kennedy to provide a means for a selective military response which would give the United States a "wider choice than humiliation or all-out nuclear action."

The fact that military forces geared to fight can also serve humanitarian needs is often overlooked by the general public, but the story deserves attention because it shows the taxpayer is getting an extra benefit from the dollars he devotes to national defense.

In June 1971 when the U.S. replied to an appeal by the Indian government to assist in handling refugees who had fled into India to escape the civil war in East Pakistan, it marked the third time that a task force of the Strike Command had carried out a mercy mission to Southern Asia.

In its 10-year history, Strike Command has been called on by the Joint Chiefs of Staff to plan for numerous other contingencies in which, fortunately, U.S. military assistance was not required. But all of these missions have proved America's willingness and ability to respond in time of need, to save lives and relieve suffering. They are also a reminder to friend and foe alike that the flexibility and know-how demonstrated in these mercy missions to far corners of the world can also be applied in responding with military forces whenever a U.S. ally or friend may be threatened.

America's allies around the world will find it comforting to know that when the United States Readiness Command comes into existence on January 1, it will be *ready* to carry on both the military and the humanitarian deeds performed by its predecessor. Ⓐ

USSTRICOM EXERCISES JOINT DOCTRINE IN BOLD SHOT/BRIM FIRE

By Major J. D. Coleman

When the bad guys from POPPI invaded the little country of TAD, the guys in the white hats that came to the rescue (after all political amenities were observed, of course) belonged to an outfit called USSTRICOM.

USSTRICOM is the United States Strike Command and, obviously, the countries of POPPI and TAD are fictional creations of the command's scenario writers.

But the actors in the scenario weren't fictional. More than 6,600 men from Army, Air Force and Naval elements, representing 36 units, took part in joint forces training exercise BOLD SHOT/BRIM FIRE 3/72.

The sprawling maneuver ground around Eglin Air Force Base, Fla., was the site for the exercise which was conducted in mid-November.

The major training objectives of BOLD SHOT/BRIM FIRE 3–72 were to exercise joint command and control procedures involved in close air support of ground forces, joint air defense procedures, and air space management techniques in a hostile air environment. Other areas of training interest included joint airborne operations, Naval air and gunfire support of ground forces, dissemination of air defense air warning information, and electronic warfare, including ECM and ECCM.

Not suprisingly, the exercise objectives also are prime objectives of Combat Developments Command. There are 17 joint operations manuals, 12 of which are the Army's responsibility. CDC has proponency for those 12 manuals, and, of course, has the option to comment on the field manuals prepared by other services.

Moreover, even within a joint arena, the components are guided by essentially single-service manuals. Here, again, CDC has a vital interest, having proponency for all Army doctrinal manuals.

ARROWHEAD became interested in BOLD SHOT/BRIM FIRE 3–72 because all three major exercise objectives involved areas of substantial concern to CDC. In addition, part of the problem play called for use of an air cavalry troop in conjunction with tactical air operations.

The initial reporting objective of *ARROWHEAD* was to see what advances were being made in the arena of joint doctrine and how these advances were being tested in the field.

Strategic Deployment . .

It was an objective based on an erroneous impression.

"We do not test; we exercise," said Major Alvie Ashley, an exercise project officer in the Operations (J–3) Office of USSTRICOM. "We don't measure; we observe and evaluate."

He explained that current doctrine is exercised where current doctrine exists and the

Participants in BOLD SHOT/BRIM FIRE 3–71 arrived at Eglin AFB by Air Force Military Airlift Command aircraft, with the bulk of the lift burden borne by the C-5A Gallaxy. At upper left, the C–5A has just arrived on the ramp at Eglin. At upper right and lower left, trucks and equipment from the 8th Missile Bn., 7th Air Defense Artillery, Ft. Bliss, Tex. roll from the cavernous interior. At lower right, the big bird lifts off during the re-deployment phase.

evaluations are qualitative and not quantitative. There are no measures of effectiveness such as are employed at Combat Developments Experimentation Command or at MASSTER against which units or concepts are tested.

Consequently, a spectator at a USSTRICOM exercise will see old and familiar sights; indeed the very script by which the problem is played is standard fare.

The scenario is designed to demonstrate USSTRICOM's ability to provide quickly a tactical air and air defense capability to a friendly country whose air forces have been destroyed by a hostile neighbor. After the prescribed diplomatic actions are followed, USSTRICOM gets the mission to provide the required air defense and tactical air capabilities.

At the same time, the Joint Chiefs of Staff, from whom all operational orders in the joint arena flow, directs the Navy fleet on station in that area of the world to provide a carrier task group as the initial U.S. presence in the friendly country.

Concurrently, CONUS based Army and Air Force elements deploy to a secure staging area in another friendly country.

Meanwhile, the situation deteriorates in the beseiged country (TAD), as the hostile nation (POPPI) begins infiltrating an irregular force deep into TADland, so that there is a sizeable enemy force surrounding the TAD airfields. Since this is where the U.S. forces must land, the situation clearly calls for a parachute assault.

If the scenario sounds like any one of the hundreds by which U.S. forces have scrimmaged, it should. It's stock, and only the names of the countries are changed to relieve the sameness.

In the case of BOLD SHOT/BRIM FIRE 3–71, however, some new twists were added. For example, the problem called for a sophisticated enemy air capability, thus requiring an extensive friendly air defense array. This was a departure from the usual sophisticated -vs- unsophisticated lineup.

Another added attraction in the problem play was the use of Naval forces in a situation that did not call for amphibious operations.

FM 31–11, a joint manual prepared by the Navy, provides the doctrine for amphibious operations. But in the case where Naval forces merely provide support, whether by gunfire or by fleet aircraft, for ground forces, there is no published joint doctrine. So this means that a certain amount of adlibbing is required.

Naval gunfire is directed by a special Air Naval Gunfire Company (ANGLICO), a Marine Corps unit that accompanied the airborne unit on the parachute assault.

Naval air support is provided through the Joint Task Force Headquarters, where daily conferences assess requirements for the following day and allocate the assets.

This conference lays on the pre-planned strikes. To get Navy air for immediate strikes, the Joint Task Force (JTF) Headquarters, through its Tactical Air Control Center, frags the Navy command. The Navy then launches its fighter planes.

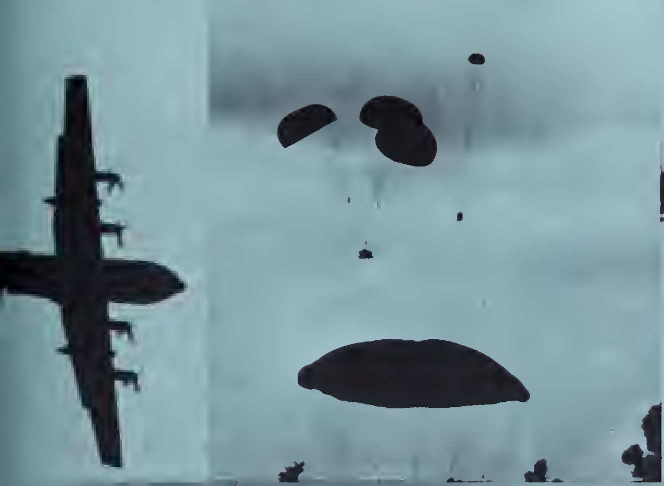
According to Major Ashley, the fleet air operations center controls the airspace over the fleet and the operations of its aircraft as long as they occupy Navy airspace. However, once they enter the operations area of the JTF, control is handed over to the Air Force Control and Reporting Center, who in turn vectors the birds to an airborne forward air controller (FAC). The FAC then directs the actual air strike.

As was noted earlier, there is no manual to support this action, although someday there might be. The Air Force has proponency for FM 100–25, titled Tactical Air Support, which has been in the works for a number of years now. When this manual is finally published, much of what is done on an ad hoc basis in these joint exercises will be solemnized by a formal document.

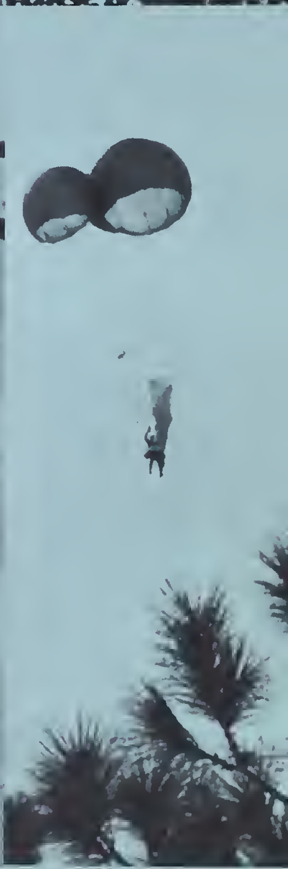
Staff officers envisage that the same manual would do much toward ironing out the details on air space coordination between the Air Force's tactical fighter aircraft, and the Army's rotary winged weapons platforms.

The introduction of a Strike Air Defense Battalion (STRAD)

Tactical Employment .



Combat forces are introduced into the maneuver area in a number of ways. One of the tried and true methods of tactical deployment is the parachute assault. Here, Air Force C–130 Hercules troop carriers from the 317th TAC Airlift Wing, Pope AFB, N.C., drop personnel and equipment into the tactical zone. The paratroopers are from the 2d Battalion, 508th Airborne Infantry, 82d Airborne Division, Ft. Bragg. Pictured at right is a malfunction that clearly demonstrates the need for an improved reserve parachute. Recognizing this need, CDC is continuing to monitor the development of a power deployed reserve. Pictured below is the deployment of a rifle platoon after a smoke bird from Troop C, 1st Squadron, 17th Cavalry, 82d Airborne Division, lays down a protective screen.



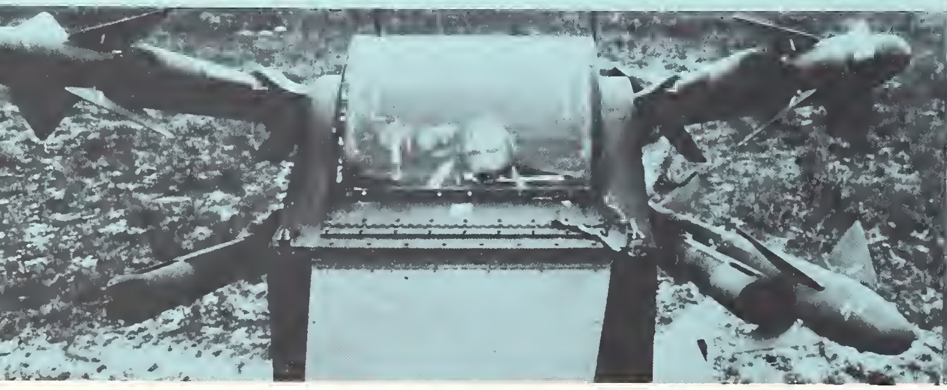
poses other problems in the field of joint air defense operations. Once again, a proposed field manual to be written by the Air Force, FM 44–11, titled Joint Air Defense Operations from Overseas Land Areas, would provide the necessary formal doctrine.

The Army air defense operations are governed by two Army manuals—FM 44–10, Army Air Space Coordination, and FM 44–1, Air Defense Artillery Employment.

Of course doctrine doesn't necessarily have to be promulgated in field manuals. There is a large body of knowledge existing in the joint arena that provides for operations of joint force, and it is this body of knowledge that is called into play during exercises like BOLD SHOT/BRIM FIRE 3–72.

Fire Support . . .

Support of all types and descriptions is needed for successful joint operations. Pictured at the top is the US Navy's guided missile frigate, the USS Leahy (DLG–16), which provided seaborne fire support. Directly above, at left, is the A–7D Corsair II from the 356th Tactical Fighter Squadron, Myrtle Beach AFB, S.C. At right an F–4 delivers napalm to a target area. Immediately below is the Chaparral air defense weapon, and pictured right are the Hawk air defense missiles and the Vulcan 20mm air defense weapon. All the air defense weapons were deployed into the maneuver area to provide air defense support against an enemy sophisticated tactical air environment.



Communications nets are established based on extensive experience of joint planners. So are the various facets of command and control and cooperation between the Army and Air Forces.

Still, just as have so many that have gone on before, much of this exercise is played right from the book. For example, the techniques of the drop of a paratroop battalion come right from FM 57–1, an Army prepared manual entitled US Army/Air Force Doctrine for Airborne Operations.

The tactical deployment of Army forces into an airhead on Air Force aircraft is nicely covered by FM 100–27, an Air Force prepared manual entitled US Army/Air Force Doctrine for Tactical Airlift Operations.

Throughout the entire operations, as U.S. Forces aided the besieged troops of TAD in eliminating the bad buys from POPPI, USSTRICOM evaluators observed, noted, and evaluated.

"Our evaluators interpret and refine their observations," Major Ashley said. "But remember, we are making only qualitative evaluations. Either something did or did not work. And if it didn't work, we ask ourselves what can be done to make it better. It's that simple."

From these evaluations come recommendations that move up the chain of command to ultimately reach the Joint Chiefs of Staff. Concurrently, the recommendations move informally on a lateral plane to the various services.

CDC's liaison officer on the ground at USSTRICOM Headquarters at MacDill Air Force Base is in a position to learn at a very early stage what the gaps are and what needs to be done to make the procedures better.

So while the exercises do not constitute a test of the units, or even a test of existing doctrine, they may still result in dramatically improved or changed doctrine just as surely as if they had been formally declared field evaluations.

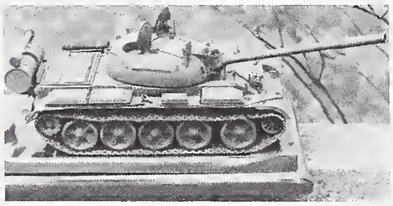
Looking like a "Charlie Alpha" in mufti, the members of the Department of Defense Close Air Support (CAS) Review Group, headed by the Honorable David Packard, Deputy Secretary of Defense, arrive at a target area to view a close air support demonstration. In the lower picture, General Throckmorton briefs members of the CAS Group following the demonstration.

The Point of the Arrow

JANUARY QUESTIONS

A. The Chinese Communists recently achieved a ______________ capability that places them in a position to become a superpower. However, its most significant military resource is ______________.

B. What am I?



C. The Advancing Blade Concept (ABC) counter rotor system theory of helicopter flight is based upon? (true or false) Equalization of lift on both sides of the rotor system (left/right) to eliminate effects of retreating blade stall.

D. Of the following computer languages, which was inspired by Department of Defense as a machine independent language which would cut across the language boundaries of all computers? (1) FORTRAN (2) COBOL (3) ALGOR (4) BASIC.

E. What is an Intensified Confirmatory Troop Test (ICTT)?

DECEMBER ANSWERS

A. As currently defined, what is the difference between the terms Close Air Support and Direct Aerial Fires?

ANSWER: Department of Army has stated that within the definition of Close Air Support (CAS) as defined in JCS Pub 1, the Army would include those fires which are delivered in close proximity to friendly forces by attack helicopters, to include aerial field artillery, LOMs and door gunners on troop carrying helicopters.

Close air support is a term commonly understood to mean fires delivered by an aircraft in proximity to friendly troops. By definition, the support must be integrated into the firepower and maneuver of ground troops. Thus, close air support may be delivered by a broad range of aircraft including strategic bombers. Because Army aircraft are integrated into Army organizations, their integration into the ground tactical plan is pre-ordained. Their participation is constant and they perform on a duty basis until the unit mission is complete or the task organization is changed. On the other hand, close air support aircraft provided by other Services are subject to outside priorities over which the ground commander has no control. These aircraft must be allocated on a task-by-task basis and acquired through a multi-service air-ground system. Therefore, that portion of close air support rendered by Army aircraft differs fundamentally from the more transient type provided from outside the Army.

The term, Direct Aerial Fires (DAF), in lieu of the term Direct Aerial Fire Support (DAFS), will be used to delineate those fires delivered by Army aircraft in close proximity to friendly troops. CAS, then, is a generic term, with DAF being an included but more specific term.

B. What am I?

ANSWER: Soviet BRDM-2 Amphibious Armored Reconnaissance Vehicle.

C. An Expanded Service Test (EST) of new materiel will include several type test objectives which were not covered by a Service Test. What are some of these objectives?

ANSWER: An EST will test a small unit equipped with the new materiel in a controlled field exercise to obtain data and observations for evaluation of doctrine and organization for employment. It also will verify basis of issue plans, training programs, and logistical support requirements for the materiel.

D. What objectives/requirements documents does the Materiel Need system replace?

ANSWER: QMR, AMDO, SDR, ADO. MN documents (MN, MN(ED), MN(P)) use the same format throughout the life cycle. The parenthetical suffix is used to denote its status in the development cycle.

E. In what area of the world has Communist China exhibited its greatest interest through economic aid?

ANSWER: Africa, with particular emphasis on the Tan-Zam (Tanzania & Zambia) Railroad.

For God and Country

I am a man under authority—Matt. 8:9.

The sizzling, live wires of high voltage fell from the pole and hit the top of the parked car. The owner of the car ran forward with a stick to remove the wires. In the struggle one of the wires fell into his hand, and, unable to free his hand from the wire, he was thrown to the ground and horribly burned. No one dared to touch him until an electrical engineer, at great risk to his own life, walked quietly among the writhing wires and cut one of them so that the man could be released and rushed to the hospital.

That electrical engineer was a man under authority. He could walk unhurt among the dangling wires and do his work because he obeyed the forces which govern electricity. His act reminds us that obedience is the first word of life. It is a far more important word than the more popular one of freedom. Most men are free from nothing, and in their strivings to free themselves from this or that, they find nothing but futility in their existence. The person who is really free is obedient. He is a man under authority. He knows the value of discipline. He has learned to obey.

This sound principle holds true in the religious life. The religious man is a man under authority. He is obedient to God, and when he gives his allegiance to anything but God, he ends in being a slave of the world. If men would learn to live usefully and joyously, they must learn to live in obedience to the good and perfect and acceptable will of God. In obedient service to the forces and values for which God stands they will find their perfect freedom.

PRAYER

O God, whose service is perfect freedom, make me obedient to Thee. Set me under Thy authority that I may live in fellowship and co-operation with Thee and Thy purposes. Amen. HENRY LEWIS, St. Andrew's Episcopal Church, Ann Arbor, Mich.

CDC COMMANDER'S CONFERENCE

Professionalism in all military activities and an intense concern for people were the themes of the annual CDC Commanders' Conference held in early November at Ft. Belvoir, Va.

The Man—not the manual—plays the most prominent role in the Army today, the chiefs of CDC's 27 groups and agencies agreed—as they took aim at the people needs of the Army.

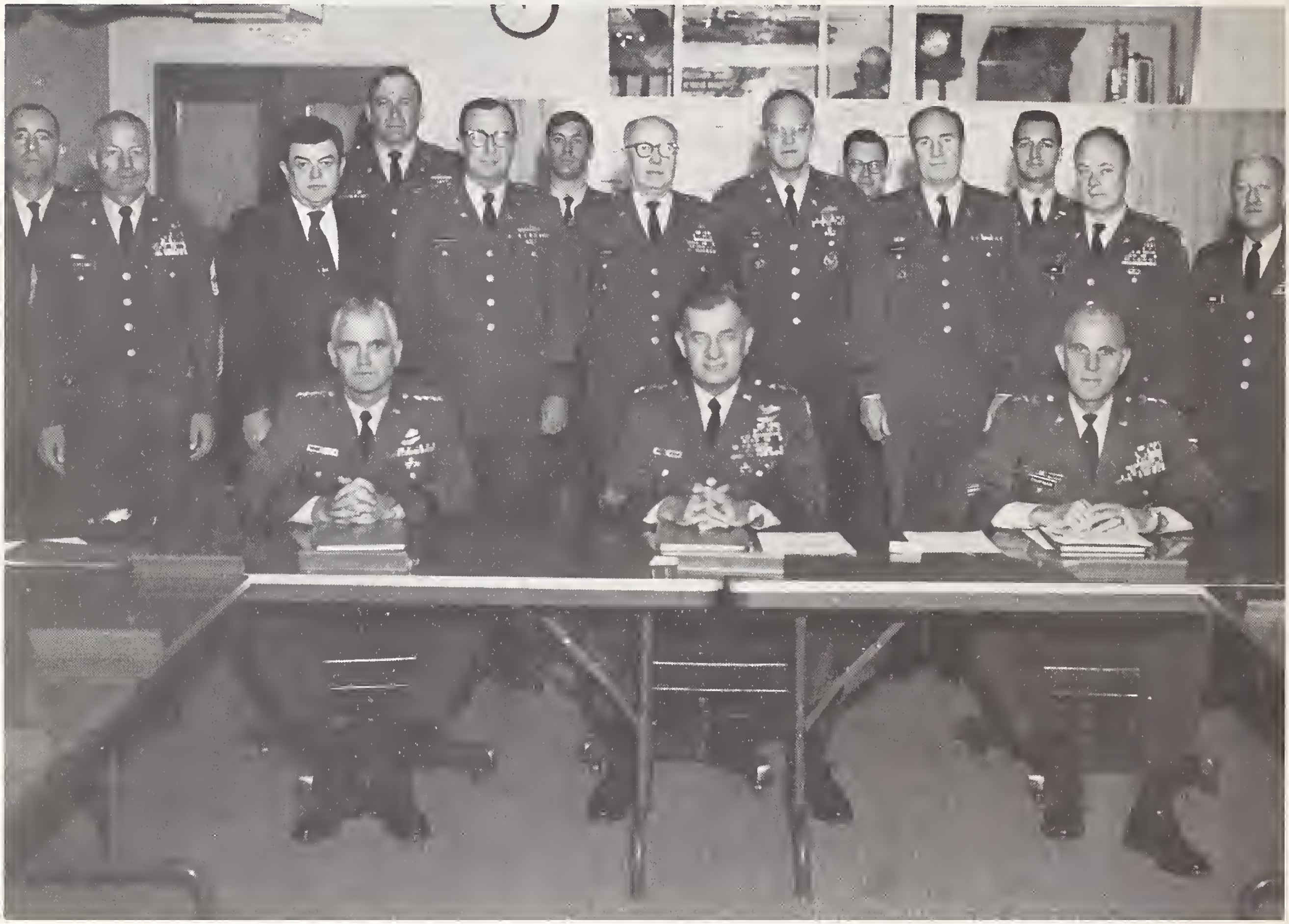
This concern for the individual Soldier was never more evident than when Lieutenant General John Norton, CDC's commanding general, announced that, henceforth, in CDC, the word "Soldier" would be spelled with a capital "S." He said the idea also has been suggested to the Department of Army as a means of enhancing the prestige of the members of the Army.

Problems in motivating and caring for the man in uniform always were key factors in all discussions ranging from the Conceptual Design of the Army in the Field through materiel and technological requirements to the current state of Chaplain-Commander relationships.

CDC's contributions to the Modern Volunteer Army and the ever-present need for increased professionalism also were common threads woven through the tapestry of some 26 high priority agenda topics.

In closing the conference, General Norton said, "we have met as Soldiers—as scientists—as people—to see what we must do that will best serve the needs of the Army."

CHIEF OF STAFF VISITS CDC



General William C. Westmoreland, Chief of Staff, US Army (seated at left), visited Combat Developments Command headquarters in late November for a round of briefings, capped with a luncheon "rap session" with selected staff officers. Lieutenant General Norton led off the briefings with an overview of the command, to include a recap of the actions leading to the command reorganization. General Westmoreland was so impressed with the briefing that he asked CDC to present the same message to senior Army commanders during the recent world-wide Army commanders' conference. Pictured above, in addition to Generals Westmoreland and Norton, is Major General Curtis Chapman, CDC's Deputy Commanding General (seated at right). Standing are (from left) Command Sergeant Major Lawrence Kennedy; Sergeant Major of the Army Silas Copeland; Mr Fred. W. Wolcott, CDC's Scientific Adviser; Major J. D. Coleman, Information Officer; Colonel John O. Shoemaker, Director of Concepts and Doctrine Directorate; Major Joe Felter, junior Aide de Camp to General Westmoreland; Brigadier General Robert E. Connor, CDC Chief of Staff; Colonel James L. Riffe, Director of Organization Directorate; Major Henry M. Reed, Aide de Camp to General Norton; Colonel Vince J. McManus, Director of Test and Evaluation Directorate; Lieutenant Colonel Martin B. Carson, representative of the Office of the Secretary of the General Staff, DA; Colonel Joe Lamb, Director of Materiel Systems Directorate; and Colonel Ernie H. Davis, Deputy Chief of Staff/Operations.

Brigadier General Condit Leaves For Japan

Brigadier General Ross R. Condit, Jr., with his reassignment to the post of Commanding General, US Army Japan, will relinquish command of the US Army Combat Developments Command Personnel and Logistics Systems Group to Colonel (P) John H. Boyes.

Born in Aumsville, Oregon on October 12, 1917, General Condit received his commission as a 2d Lieutenant of Ordnance directly from civilian life.

Among the many assignments held by General Condit are Commanding Officer, 71st Ordnance Battalion, USAREUR; Deputy Ordnance Officer, Military Assistance Advisor Group, Taiwan; Chief, Plans and Policy Branch of the Materiel Maintenance Division, Washington, D.C.; Assistant Commandant of the US Army Ordnance School, Aberdeen Proving Ground, Md.; Senior Advisor, Military Assistance Command, RVN; Assistant Chief of Staff, Maintenance, Seventh Army Support Command, Germany; and Deputy Director of Logistics, Joint Staff, Office Joint Chiefs of Staff.

General Condit received his BS degree from the University of Maryland, and his military education included the Ordnance School, Command and General Staff College, Command Management School, Armed Forces Staff College, Army Logistics Management Center and the Industrial College of the Armed Forces. His attendance at the Defense Management Systems Course, US Naval Postgraduate School and Senior Executive Orientation Course, and the Department of the Defense Computer Institute round out his professional educational background.

Among the personal decorations held by the general are the Legion of Merit with two Oak Leaf Clusters, Bronze Star, Air Medal, Army Commendation Medal with Oak Leaf Cluster and Army Medal, Second Class (RVNAF).

General Condit and his wife Katharina have a son, Howard, currently a cadet at the US Military Academy at West Point.

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